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ABSTRACT

This document represents the second of five components of a project conducted to design a comprehensive information system (termed SYSTEM) for identifying, selecting, and disseminating relevant military curriculum materials to civilian vocational and technical education programs. This particular report discusses a survey involving 175 educators in 88 secondary and postsecondary schools to determine civilian educator experiences with the acquisition and use of military curriculum materials and to identify desirable characteristics of a centralized SYSTEM. An introductory chapter conveys the need and purposes of the survey. Chapter II, Review of the Literature, contains sections on similarities between military and civilian jobs, the use of military-developed materials in civilian schools, acquiring military materials for civilian use, advantages of using military curriculum materials, and potential problems in using military materials in civilian schools. Chapter III describes the methodology of the survey. In chapter IV, the findings of the school survey are summarized under the following categories: Background information selection and acquisition of materials; use of materials; curriculum materials needs; and desirable characteristics of a new SYSTEM. Chapter V contains conclusions of the survey, implications and recommendations for design of the SYSTEM, and recommendations for further research. Appendixes include survey forms, correspondence related to the survey, and lists of curriculum priority areas. (LMS)

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UTILIZATION OF MILITARY-DEVELOPED CURRICULUM MATERIALS IN CIVILIAN VOCATIONAL PROGRAMS: A SCHOOL SURVEY

by

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PREFACE

This document is one of several reports of the "Department of Defense Curriculum Materials Utilization in Vocational Education" project (Contract NO. 300-750-276) being conducted by The Center for Vocational Education at The Ohio State University. It reports the findings, implications, and recommendations of a survey of civilian educators' experiences with the acquisition and use of military-developed curriculum materials.

The data gathered via the school survey are inputs into the design of a prototype system for making military-developed curriculum materials available to civilian educational programs. Other project reports related to the system design and overall project activities are:

- Review of Existing Information Systems and Networks: Applicability to the Design of the System
- Military Curriculum Materials Identification, Selection, and Acquisition Strategies and Procedures
- A System to Provide Military Curriculum Materials to Civilian Vocational and Technical Educators
- Index of Military Curriculum Materials Related to Civilian Vocational Programs

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SUMMARY

A survey of educators in civilian vocational and technical education programs was conducted as part of the "Department of Defense Curriculum Materials Utilization in Vocational Education" project; this project was conducted by The Center for Vocational Education at The Ohio State University. The major purposes of the survey were to determine civilian educator experiences with the acquisition and use of military curriculum materials* and to identify desirable characteristics of a SYSTEM** designed to provide civilian vocational and technical educators with easy access to military curriculum materials. Specific objectives of the survey were:

1. To identify characteristics of personnel using military-developed curriculum materials in civilian vocational programs;

2. To determine whether existing information systems/sources are being used by civilian vocational educators to acquire curriculum materials;

3. To identify criteria used by vocational educators for selection of military-developed curriculum materials;

4. To determine the extent to which existing information systems/sources are used by civilian vocational educators to *obtain* military-developed curriculum materials;

5. To determine the types, sources, and cost of military-developed curriculum materials being used in civilian schools;

6. To identify problems and issues encountered by civilian schools in the *use* of military-developed curriculum materials;

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*Curriculum materials include courses of study, lesson plans, audio-visual aids, student-use materials, technical manuals, and other instructional materials.

**SYSTEM in capitals, refers to the physical facilities, financial assets, personnel, and procedures which when designed, tested, operated, evaluated, and revised will identify, acquire, and disseminate military curriculum materials to civilian educational programs.

7. To identify problems and issues encountered by civilian schools in *obtaining* military-developed curriculum materials; and

8. To determine the priority occupational areas in which curriculum materials are needed.

A mailed survey questionnaire and visitations to selected sites were used to collect school survey data. The school sample was selected from referrals by the following sources, in the following order:

1. State vocational education curriculum coordinators,

2. Mailed post-secondary school survey respondents,

3. Consultants or other individuals interested in the project,

4. Written or verbal responses to the project's article in the *Centergram* and other professional journals,

5. Coast Guard,

6. Community College of the Air Force, and

7. Aerospace Education Foundation.

Three hundred fifty-seven (47%) of the 763 questionnaires mailed were returned. One hundred seventy-five of the 357 returns contained usable data. Therefore, the sample consisted of the 175 of the 357 educators who responded to the questionnaire. The 175 educators represented 88 secondary and private and public post-secondary schools (vocational-technical schools, technical institutes, junior or community colleges, four-year universities or colleges) in the United States.

Thirteen sites were chosen for one-day interviews with teachers and administrators to gather more in-depth information on civilian schools' use of military curriculum materials. Nine of the 13 sites were schools participating in the mailed school survey and 4 were sites with educators who participated in the pilot test of the school survey questionnaire. Sites were chosen for visitation based on the following criteria: willingness to host a visit, agreement on an interview schedule, varied types of curriculum materials used, type of school, and variety of sources used to request materials.

With the exception of write-in responses, the *Statistical Package for the Social Sciences* (Nie, Bent, and Hull, 1970) was used to analyze questionnaire data; frequencies, percentages, and measures of central tendency were computed. Information gathered through all site visits was summarized in terms of the problems, ideas, concerns, and recommendations expressed by participating educators. Information gathered at each site was also presented as a case study for that particular site.

The major findings and conclusions of the survey are: (1) the large majority of the respondents using military-developed curriculum materials had military experience, used military material in trade and industry areas, were middle-aged males, and were from post-secondary institutions; (2) most respondents selected and acquired military-developed curriculum materials directly from the military services (primarily developed by the Air Force, Army and Navy), and on the basis of low cost and non-availability from other sources, and *not* on the availability of audiovisual and support materials; (3) most of the respondents indicated that the greatest problem in obtaining materials was identification of their source; too expensive materials was not a major factor relative to the other factors; (4) civilian users of military-developed curriculum materials used them primarily as supplements or references, used printed more than audiovisual or hardware, and most often used materials acquired from the military or Superintendent of Documents; (5) many of the respondents indicated that absence of support material was the major limiting factor in the use of military-developed curriculum materials; and (6) SYSTEM characteristics were viewed by respondents in the following order of importance: full description of material, ability to purchase portions of a course, maximum of 2-3 weeks turn around in filling orders, technical assistance in using material, and responsiveness to user suggestions in changes in the SYSTEM.

Recommendations made for consideration in the design of the SYSTEM are that the SYSTEM should be designed to: (1) publicize the availability of military-developed curriculum materials; (2) create awareness of and provide vocational educators with easy access to materials at a price which is competitive with similar materials available in the civilian sector; (3) make courses available in part as well as a total package, with emphasis on making printed materials available immediately and then making audiovisual materials available; (4) continuously assess the needs of its users; and (5) incorporate all of the desirable SYSTEM characteristics as identified by survey respondents.

CHAPTER I

INTRODUCTION

For years United States tax dollars have been allocated for the development of curriculum materials[1] for training Air Force, Army, Marine Corps, Navy, and Coast Guard personnel. The U. S. Department of Defense and the U. S. Department of Transportation (Coast Guard), which are the major governmental agencies engaged in this training, have developed a wealth of quality curriculum materials. Research reports show that these military curriculum materials are potentially useful in civilian vocational education programs. Some of the materials have even undergone testing and revision for adaptation to civilian school programs. Yet, civilian schools do not generally have ease of access to these materials to facilitate their use.

Recognizing (a) the time and monetary investment in the development of training materials for military personnel, (b) the potential usefulness of military curriculum materials in civilian schools, and (c) the absence of a centralized mechanism for making curriculum materials from all branches of the armed services available to the civilian community; the Department of Defense, the Coast Guard, and the U. S. Office of Education have cooperatively launched efforts to allow the civilian community to more effectively reap the benefits of its investment. One such effort was the funding of a project conducted by The Center for Vocational Education, The Ohio State University. The ultimate objective of the project was to develop a SYSTEM[2] to assess the need for curriculum materials by civilian vocational education programs, identify and select materials based on educator-developed criteria, make information about these materials accessible to the civilian community, and provide these materials at a reasonable cost.

During the course of this project, five major work components were undertaken and completed. They are:

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[1]Curriculum materials include courses of study, lesson plans, audiovisual aids, student-use materials, technical manuals, and other instructional materials.

[2]SYSTEM in capitals, refers to the physical facilities, financial assets, personnel, and procedures which when designed, tested, operated, evaluated, and revised will identify, acquire, and disseminate military curriculum materials to civilian educational programs.

1. An analysis of existing information systems;

2. A survey of educators using military curriculum materials in civilian secondary and post-secondary vocational education programs;

3. The development and validation of curriculum materials selection strategies and procedures;

4. The identification, selection, and acquisition of relevant military curriculum materials; and

5. The design of a prototype SYSTEM for making military curriculum materials readily available to civilian educators.

This report is the product of the second project work component--a survey of educators using military curriculum materials in civilian secondary and post-secondary vocational education programs. Based on the findings and conclusions of the survey data, the report provides recommendations for the design of a prototype SYSTEM for making military curriculum materials available to civilian educators (component five above).

Need

Some military-developed curriculum materials have been selected and made available for public use by individuals, educational institutions, and business/industry training agencies. A number of civilian educators over the years have obtained and used these materials in a variety of ways. However, no known study (excluding testing studies) has identified, analyzed, and responded to civilian concerns with identifying, acquiring, and using curriculum materials developed by *all* branches of the military. Neither have studies been conducted which identified from *all* branches of the armed services those curriculum materials which are available and appropriate for civilian occupational training. Therefore, there was a need to conduct a study of civilian school personnel with experience using military curriculum materials; the findings of the study serve as user input to designing and recommending to the U.S. Office of Education an efficient and effective SYSTEM for providing military-developed curriculum materials to civilian educators.

Purpose and Objectives

The major purpose of the school survey was to determine civilian educator experiences with the acquisition and use of military-developed curriculum materials. Specific objectives of the survey were:

1. To identify characteristics of personnel using military-developed curriculum materials in civilian vocational programs;

2. To determine whether existing information systems/sources are being used by civilian vocational educators to acquire curriculum materials;

3. To identify criteria used by vocational educators for selection of military-developed curriculum materials;

4. To determine the extent to which existing information systems/sources are used by civilian vocational educators to *obtain* military-developed curriculum materials;

5. To determine the types, sources, and cost of military-developed curriculum materials being used in civilian schools;

6. To identify problems and issue encountered by civilian schools in the *use* of military-developed curriculum materials;

7. to identifing problems and issue encountered by civilian schools in *obtaining* military-developed curriculum materials; and

8. To determine the priority occupational areas in which curriculum materials are needed.

An additional purpose of the school survey was to identify desirable characteristics of a SYSTEM designed to provide military curriculum materials to civilian vocational educators. The methodology section of the report outlines the procedures followed to meet all of the objectives of the school survey.

CHAPTER II

REVIEW OF THE LITERATURE

A review of the literature was conducted to identify studies which contained relevant information about user experiences with military curriculum materials. The ERIC and AIM/ARM data bases contained a few studies which addressed problems encountered by civilian educators in obtaining and using military curriculum materials. Some of these studies also assessed current and future curriculum needs of vocational educators. However, none of the studies provided sufficient information for project purposes.

Several references were identified, however, on each of the following topics: (1) similarities between military and civilian jobs, (2) use of military-developed materials in civilian schools, (3) acquisition of military-developed materials for civilian use, (4) advantages of using military materials, and (5) potential problems in using military materials in civilian settings. Following are summaries of the literature reviewed on each of these areas.

Similarities between Military and Civilian Jobs

It is becoming increasingly clear that a large part of military training is comparable and is transferable to civilian employment or education. Brown and Callahan (1973) found that "most Navy work specializations have clear counterparts in civilian institutions." Shelburne and Groves (1965) indicated that "there is a trend toward civilianization of specializations within the service due to the fact that there are many civilians working for military services." Another indication of this trend is that many functions previously performed by personnel in uniform are now being contracted by the military to civilian firms.

Two publications have been developed to serve as guides in transferring military education and experiences to civilian work or education settings: the *Department of Defense Military/Civilian Occupational Source Book* and the *Guide to the Evaluation of Educational Experiences in the Armed Services.* The *Occupational Source Book* (U.S. Department of Defense, 1975) was " . . . created to serve as a single reference document for enlisted military occupational information, and wherever possible equates these occupations to their civilian counterparts as identified in the *Department of Labor Dictionary of Occupational Titles.* These occupations are also identified under the fifteen career clusters developed by the Department of Health, Education and Welfare.

The *Source Book* . . . formulates composite job statements for the five military services in those occupational areas where commonality of jobs tasks exists."

The American Council on Education (ACE) has also taken an active role in studying the association between military training and civilian educational credits. Their *Guide to the Evaluation of Educational Experiences in the Armed Services* is primarily used by post-secondary institutions, state departments of education, civil service commissions, secondary schools, and employers. The *Guide* (American Council on Education, 1974) was designed for civilian response to three emerging needs:

> First, all courses have been evaluated for possible credit in the vocational and technical categories in addition to the baccalaureate and graduate categories of previous editions. Second, active-duty men and women have been enrolling in increasing numbers in civilian educational programs and seek credit for related formal military courses soon after completing their service school training. Third, credit recommendations are needed for the many courses initiated by the military since 1968.

These studies reflect an increasing "civilianization" of some of the training experiences in the military. According to a study by Lewis and Lewis (1971), "vocational educators along with those in other educational areas are becoming increasingly aware of the value of military techniques and materials in providing direction to their educational activities." Thus, it seems that some military and civilian jobs are similar and that many of the training materials used in the military should be relevant for job training in civilian schools.

Use of Military-Developed Curriculum Materials in Civilian Schools

Several studies have been conducted on the use of military materials in civilian schools. Straubel examined the usefulness of the U.S. Air Force instructional systems in six Utah schools ranging from a high school to a four-year college. In the final report (Straubel, 1969) he stated that:

> The . . . use of Air Force techniques and materials resulted in student performance as good or better, in each instance, than student performance resulting from the use of conventional techniques and materials; . . . results were achieved with minimum modification costs.

Straubel (*HEW News*, 1970) also noted that the Utah project "was the first full-scale test of whether military experience in vocational-technical education could be transferred to the civilian educational system.

In a project conducted by Stoller (1970), an index/cataloging system was developed to provide manpower training and vocational instructors with systematic access to training aids being used by the U.S. Navy. He concluded that:

> The effectiveness of this index/cataloging system as a source of instructional materials for the classroom teacher was evaluated at nine test sites. From this limited testing it appears evident this system is effective and contains a significant number of training aids which are usable in a variety of vocational programs existing at the high school, vocational-technical school, and community college levels.

A study was conducted at Virginia Polytechnic Institution and State University (Lewis and Lewis, 1971) to determine ways of identifying information from military resources which might be of value to vocational educators in the public schools. The study included a mail survey of head vocational educators in the department of education for each of the fifty states, District of Columbia, Virgin Islands, and Puerto Rico. One conclusion of the study was that "Military information related to occupational concerns in public school vocational education programs existed but was not widely utilized."

In another study by Lewis (1972), he identified a minimum of fifty U.S. Army publications which might be useful in public school vocational education programs. In addition, he determined the readability of these materials and prepared an annotated bibliography of identified materials.

Acquiring Military Materials for Civilian Use

The Aerospace Education Foundation, the Northwest Regional Educational Laboratory, and the U.S. Naval Institute have taken an active role in acquiring military training materials for distribution to the civilian educators. Straubel (1971) stated:

> As positive results from the Utah experiment became known, primarily due to a nationally circulated HEW press release, requests for information about Air Force courses and requests for course materials came from many segments of the educational community, from allied organizations, the education industry, unions, hospitals, etc.

In response to this demand, the Aerospace Education Foundation made several Air Force instructional systems available to the public.

In addition to the preceding activities, the Aerospace Education Foundation (with a project grant from the U.S. Office of Education) developed and recommended a central clearinghouse (system) for the acquisition, reproduction, and dissemination of Air Force curriculum materials to civilian educators. In the final report Straubel (1971) indicated that the proposed system would provide Air Force curriculum materials in a variety of media formats. The system would also provide preview kits on each course made available through the system. To accommodate possible governmental budget matters, options for operationalizing the system were also recommended.

The Northwest Regional Education Laboratory (Stoller, 1968) acquired Navy training aids and developed an index/cataloging system. The index component, *Instructor's Index of U.S. Navy and Air Force Materials for Teaching Basic Electricity*, listed available Air Force and Navy materials. The materials listed were developed by and available from the U.S. Naval Training Aids Center at Treasure Island, California.

The U.S. Naval Institute identified naval training materials that would be adaptable to civilian vocational-technical schools. One complete instructional system entitled "Navy Basic Electricity and Electronics Individualized Learning System" was collected and repackaged. By the fall of 1975, a free sample kit of this system was sent to over one hundred schools with junior ROTC programs. The head of each ROTC unit reviewed and in some cases implemented the instructional system. As the demand for other learning systems of the Navy are documented, the U.S. Naval Institute will consider packaging the materials and making them available as a total unit.

Finally, in a previously mentioned study conducted by Lewis (1972), about fifty U.S. Army publications were identified as having potential use in public vocational education programs. Although the acquisition of these materials was not included in the scope of the study, the identified publications were cited as being available in local depository libraries or from the Superintendent of Documents, Washington, D.C.

Advantages of Using Military Curriculum Materials

A number of reports have described advantages of using military-developed curriculum materials. Some of those advantages are that:

1. The Air Force materials are criterion-referenced. When used as described, the probability is high that they achieve the desired results. (Aerospace Education Foundation, 1972)

2. The Air Force instructional system allows for individualized attention to students, permits self-tutoring and self-paced remedial work, and it increase teacher production. (Straubel, 1971)

3. Several naval materials can be modified, at reasonable cost, to provide high quality inputs to career education programs. (Brown and Callahan, 1973)

4. An increased and more efficient usage of military materials in vocational education programs can reduce financial waste and increase program efficiency by decreasing duplication in materials. (Lewis and Lewis, 1971)

5. The Navy is presently redesigning its courses as student-centered, modularized, individualized, self-paced criterion-referenced courses. (Rogers and Nisos, 1975)

The studies seem to suggest that using military-developed curriculum materials can save tax dollars, increase teacher productivity, minimize the duplication of effort in curriculum development in both the military and civilian sectors, and increase the individual learning achievement of students.

Potential Problems in Using Military Materials in Civilian Schools

The studies reviewed indicate that military materials are very useful in civilian educational settings; however, there are some problems regarding the lack of individualization of instruction, the attitude/reaction of teachers, the accessibility of the materials, and the cost of the materials have been raised. Shelburne and Groves (1965) report:

> The Armed Forces have always been quick to use new instructional techniques and in many instances played an important part in their development. Widespread use of motion pictures, television, teaching machines, and ingenious simulators has been particularly noteworthy. However, in their instructional methods and curriculums, the military has tended not to recognize the individual differences which exist within a group selected for training.

At the present time the military is turning toward individualized instruction as evidenced by their self-paced individualized instructional package (e.g., the naval electricity and electronics program). The correspondence courses of the Air Force, Army, Navy, Marine Corps, and Coast Guard are also an indication of a step toward the self-paced individualized concept.

Another potential problem related to the use of military curriculum materials is the attitude of teachers toward the materials. Most military curricula are criterion-referenced, with a format quite different from the conventional curricula format being used by most civilian teachers. Therefore, one can conclude that teachers' negative attitudes toward military materials--because of the criterion-referenced structure--can affect the degree to which the materials are used in civilian vocational instruction. Supportive of this conclusion is one reported by the Aerospace Education Foundation (1971). From several teacher-centered activities generated by the Utah project, the Foundation reported that:

> . . . based on evidence available, . . . educational reform keyed to learning-output instruction would generally face negative teacher attitudes . . .
>
> Investigators close to the problem seem to be in agreement that the most difficult thing to accomplish with teachers is modification of their outlook from one that is procedure-oriented to one that is outcome-oriented.

As with most new endeavors, change encounters resistance. However, after having more exposure with criterion-referenced materials (via workshops or other in-service activities) in civilian settings, more teachers will perhaps adapt military curriculum materials for their own use.

The most pervasive problem seems to be that of accessibility. In *New Thrusts in Vocational Education*, Straubel (1971) stated that "There has been scattered borrowing by schools near U.S. military installations in the past. . . . But there was no organized transfer of information or techniques." Lewis and Lewis (1972) found that educators are becoming aware of the value of military curriculum materials in civilian educational programs, but the current efforts used to relate the instruction in both public and military educational programs have generally been piecemeal in nature. Further indications of this problem are implicit in some of the conclusions of this same report:

- Many educators associated with the area of curriculum materials recognized the potential value of military information to vocational education programs but generally found such information to be inaccessible.
- Present sources of military information for use in these programs were unable to supply the various types of information in sufficient quantities to meet present educational needs.
- Present sources of such military information have not been utilized fully by educators--partly because the sources have not devoted enough effort to disseminating their materials.

It is likely, then, that the problem of accessibility will not be reduced unless (1) more educators are made aware of the value and availability of military materials and (2) the delivery systems used to make military materials available are simplified.

In summary, the literature establishes that military curriculum materials are adaptable for use by civilian educational programs and that some advantages as well as potential problems in using these materials in civilian educational programs exist. Several studies have been conducted which acquired and/or reviewed military materials for civilian applicability. However, very little has been done to make the public aware of the availability of the services' materials or to provide easy access to these materials. Further, little information has been gathered from the few educators who have experience with the acquisition and use of these materials. The next section of this report gives an explanation of how the project gathered feedback information from users of military curriculum materials in civilian educational programs.

CHAPTER III

METHODOLOGY

This section of the report describes the strategies and procedures used to collect and analyze data gathered through a survey of civilian secondary and post-secondary schools and training agencies. The sample selection, data collection, and data analysis procedures are addressed herein.

Sample Selection

The population for this study consisted of civilian secondary and post-secondary schools and training agencies in the United States which have used or are using military-developed curriculum materials. Several procedures were employed to identify potential schools for the survey. Names of schools and business/industry agencies, and in some cases the names of appropriate personnel were identified through referrals by: (1) state vocational education curriculum coordinators; (2) consultants and interested persons attending professional meetings; (3) post-secondary school survey respondents; and (4) written and oral communications resulting from the project's announcement in The Center for Vocational Education newsletter and several professional journals. In addition, the Aerospace Education Foundation, U.S. Coast Guard, and Community College of the Air Force supplied project staff with a list of individuals, schools, and business/industry agencies which had requested curriculum materials.

Public and private secondary and post-secondary schools, business/industry agencies, state departments of education, research and development centers, and other organizations were among the more than four hundred referrals of places in which military-developed curriculum materials may be in use. Each referral was classified as one of the following types: secondary; private post-secondary; public post-secondary; business/industry; or other.

Public and private post-secondary schools referred to the project included those which offered academic work at a level beyond that required for a high school diploma (i.e., grade thirteen and beyond). They included vocational schools, technical schools, technical institutes, junior colleges, community colleges, and four-year universities or colleges.

Because of the large number and variety of school types included in the public post-secondary category of referrals, subcategories were developed. The purpose of the subcategories was to ensure representation of all types of schools in this category. The subcategories and definitions adopted from *Vocational Education: Directory of Postsecondary Schools with Occupational Programs, 1971, Public and Private* (Kay, 1973) for project purposes are:

Vocational or technical school--A school that exclusively or principally provides occupational education to persons who have completed or left high school and are available for full-time study.

Technical institute--An institution offering instruction in one or more of the technologies at a level above the skilled trades and below the professional level.

Junior/community college--An institution offering the first 2 or 3 years of college instruction. It frequently grants a certificate or an associate degree but not a bachelor's degree.

College--An institution offering instruction at the college level leading to a bachelor's or higher degree. It frequently offers occupational programs leading to an associate degree, diploma, or certificate below the baccalaureate.

Other--An institution or school not classified in any of the above subcategories.

Patterson's American Education (1975) was used as an additional reference for classifying referrals into the categories and subcategories.

After excluding referrals on the basis of insufficient information for making initial contacts and referrals which were inappropriate for surveying, 325 civilian secondary and post-secondary schools made up the population from which the sample was selected. The sample was to consist of not less than 100 civilian schools which project staff could confirm as using or having used military curriculum materials. Selection of the sample would be made by contacting each school referred by the following sources, in the following order:

1. State vocational education curriculum coordinators,
2. Mailed post-secondary school survey respondents,
3. Consultants or other individuals interested in the project,
4. Written or verbal responses to the project's article in the *Centergram* and other professional journals,
5. Coast Guard, and
6. Community College of the Air Force.

A seventh source[3], the Aerospace Education Foundation (AEF), provided the most numerous listing of schools. This listing was stratefied by school

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[3]Given that the largest number of schools were provided by the Aerospace Education Foundation (AEF) and assuming that those schools would have experience using military curriculum materials as modified by AEF, schools were contacted from the sources as mentioned above, with selected schools on the AEF list being contacted last. This was done with the hope of not weighting the sample with respondents having experience using modified curriculum materials.

type within each of the ten U.S. Office of Education regions, and a minimum of 25 schools were selected after all schools from the other sources had been contacted. Project staff did not find it feasible (given sampling constraints) to contact every school on the AEF list; therefore, the initial school survey sample was composed of all schools referred by the first six sources mentioned, plus a minimum of 25 schools selected by stratified random sampling from the Aerospace Education Foundation list.

To remain in the sample, each school (contacted via telephone) was required to: (a) have staff with experience using military-developed curriculum materials, (b) give verbal agreement to participate in the survey, (c) identify a contact person for the school, (d) determine the number of questionnaires to be mailed, and (e) provide appropriate mailing information (see Appendix A). At a pre-established cutoff date for identifying schools for participation in the survey, telephone contacts had been made with persons at 200 of the 325 schools. One hundred twenty-three of the 200 secondary and post-secondary schools contacted met the requirements for participation in the survey (see Appendix B); the other 77 schools were excluded from participation in the survey because the schools did not have staff with experience using military-developed curriculum materials. The 123 participating schools, representing forty states, had a total of 763 school personnel who reportedly had experience using military curriculum materials. It should be pointed out that in some cases contact persons estimated the number of questionnaire forms to be mailed, and unfortunately, these estimates were often too high.

Data Collection

A mail survey questionnaire and school site visits were selected as procedures most appropriate for collecting data. The survey instrument was developed to determine civilian educator experiences with the acquisition and use of military-developed curriculum materials as well as to gather information on desirable features of a SYSTEM. The instrument was critiqued and revised by project staff and pilot tested by six educators in three civilian schools in Ohio and Utah and by two state department of education staff in Utah. Based on recommendations from pilot test participants, The Center's Evaluation Division, the Committee on the Protection of Human Subjects, and United States Office of Education staff, the questionnaire was further revised. Subsequently, it was cleared by the United States Office of Management and Budget for data collection (see Appendix C).

The survey instrument was mailed to 763 educators from 123 selected schools and agencies in forty states. In cases where there was more than one participant per school or agency, the questionnaires were sent to a contact person. Persons receiving the questionnaire were requested to return it by the indicated due date. Those persons for whom the questionnaire was not appropriate were asked to return their forms with "NA" (not applicable) written on the cover.

Cover letters (and a project brochure for contact persons) were developed and attached to each questionnaire mailed. Each letter provided a brief

statement of the purpose of the survey, kind of participant needed to complete the instrument, and important information regarding the return of survey instruments and appropriate project contacts (Appendix C).

Approximately two weeks after questionnaires were mailed, a follow-up letter (see Appendix C) was developed and mailed to the survey contact person at each school. Follow-up telephone calls were also made to request the return of questionnaire forms.

Following the mail survey, nine schools were selected for one-day site visits to interview teachers and administrators to gather more in-depth information on civilian schools' use of military materials. The criteria used to select schools for visitations included: willingness to host a visit, agreement on an interview schedule, varied types of curriculum materials used, type of school, and variety of sources used to request materials. These criteria were also applied when selecting pilot test sites. Educators participating in visitations (including pilot test participants) provided case study data. See Appendix D for a list of persons and schools participating in the site visitations as well as a case study for each site visited.

Data Analysis

A total of 357 (47%) of the 763 mailed survey questionnaire forms were returned. One hundred eighty-two of these 357 returns were marked "not applicable." The remaining 175 forms contained useable data and represented educators from eighty-eight secondary and post-secondary schools and agencies (see Appendix B). Any further reference to "survey participants/educators/respondents" or "survey schools" will include *only those 175 educators from the 88 schools.*

With the exception of write-in responses, questionnaire data were coded, keypunched, and then tabulated at The Ohio State University Computer Center. The *Statistical Package for the Social Sciences* (Nie, Bent, and Hull, 1970) was used for data analysis. The program computed frequencies, percentages, and measures of central tendency. Chi squares and correlation coefficients were also calculated on some questionnaire items; however, due to the small number of responses for most of the cross tabulations, these statistics are not presented in the findings.

Case study information about the 13 visitations (12 schools and 1 state department of vocational education) was summarized. The summary reports the problems, ideas, concerns, and recommendations expressed by educators, as well as a description of some of their experiences with military curriculum materials.

CHAPTER IV

FINDINGS

Findings of the mailed school survey questionnaire and of the school case studies are presented in this chapter in six sections. They are: Background Information, Selection and Acquisition of Military-Developed Curriculum Materials, Use of Military-Developed Curriculum Materials, Curriculum Materials Needs, SYSTEM Characteristics, Summary of Case Studies of Selected Sites, and Summary of Findings.

Background Information

Objective 1 - To identify characteristics of personnel using military-developed curriculum materials in civilian vocational programs.

One hundred seventy-five educators with experience using military-developed curriculum materials in a civilian school setting participated in the survey. These educators included 11 females, 156 males, and 8 additional educators who did not indicate both their age and sex (see Table 1). Table 1 also shows that the majority of the responding educators (89%) were males between 40-64 years of age. Only three educators were 25 years old or under.

TABLE 1
AGE AND SEX OF RESPONDENTS*

Age	SEX			Total Respondents
	Female	Male	Sex not Reported	
25-under	--	3	--	3
26-39	7	50	--	57
40-64	4	103	--	107
Age not reported	--	--	8	8
Total & Percent	11(6%)	156(89%)	8(5%)	175 (100%)

*Eight educators did not indicate sex and age.

Participants in the survey represented 88 different public and private secondary and post-secondary civilian institutions. The breakdown of individual respondents by school type is shown in Table 2. The largest number of educators (63) were employed at public vocational-technical schools, whereas the smallest number of educators (7) worked at private post-secondary institutions. Overall, approximately three-fourths of the educators were from public post-secondary institutions and one-fourth from public secondary schools. Some of the schools listed in the "Other" category were adult school; graduate school; comprehensive; and vocational-technical, which service both secondary and post-secondary students.

TABLE 2
RESPONDENTS BY SCHOOL TYPE

School Type	Respondents' Sex			Total* Response
	Female N=11	Male N=156	Sex not Reported N=8	
Public Secondary (grades 9-12)	2	45	2	48
Private Post-secondary (13-14)	-	6	1	7
Public Post-secondary				
Vocational-technical (13-14)	4	55	4	63
Technical Institute (13-14)	1	15	2	18
Junior College (13-14)	4	21	-	25
Four-year University or College (13-16)	-	15	-	15
Other	-	12	-	12
Total*	11	169	8	188

*Some educators checked more than one category of "School Type."

Educators from these schools also represented varied areas of expertise. Trade and industrial education was the area in which the largest number of educators had expertise, with 44 educators from public post-secondary vocational-technical schools and 32 from public secondary schools (see Table 3). Five educators with trade and industrial education backgrounds were from private post-secondary schools. Twenty-two educators specialized in health occupations; 19 were public post-secondary school and 3 from public secondary schools. Distributive, business and office, home economics, and vocational agriculture education were the areas having the least number of representatives in the survey.

Although the "Other" category (see Table 3) had the second largest number of respondents, it was not considered the second largest specialty area due to the variety of specialities listed therein. Included in this category were research, counseling, curriculum, law enforcement and corrections, and general education. This category also included educators representing each of the types of schools listed in Table 3.

TABLE 3
PRIMARY SPECIALTY AREAS BY SCHOOL TYPE

School Type	Number of Respondents in Specialty Areas							
	Business & Office	Distributive	Health Occupations	Home Economics	Trade & Industry	Vocational Agriculture	Other	Number of Respondents* (N=175)
Public Secondary School	-	-	3	2	32	2	8	47
Private Post-Secondary School	-	-	-	-	5	-	2	7
Public Post-Secondary School:								
Vocational-technical	1	-	8	1	45	1	7	63
Technical Institute	-	-	4	-	11	-	3	18
Junior College	1	1	6	-	12	-	5	25
Four-year University or College	-	-	1	-	10	-	5	16
Other	-	-	-	-	9	-	3	12
TOTAL	2	1	22	3	123	3	33	187

*This number reflects more than one response by some educators.

Table 4 shows the educators' years of teaching experience in the areas of specialization, as well as their years of experience with using military curriculum materials. The largest number of the respondents had five years of teaching experience in their primary specialty area and one year of experience with using military curriculum materials. While the median for respondents' years of teaching experience in the primary specialty area was eight, the median was only half that number (four years) for those having teaching experience with using military-developed curriculum materials. This may mean that half of the educators' years of teaching experience has included the use of military curriculum materials.

TABLE 4
RESPONDENTS' YEARS OF TEACHING EXPERIENCE

Teaching Experience	Respondents (N=175) Statistic on Years of Experience					
	Number of Responses	Number of No Responses*	Range	Mean ($\bar{x}$)	Median	Mode
Teaching Experience in Primary Specialty Area	174	1	1-36 years	10	8	5
Teaching Experience with using Military-Developed Curriculum Materials	163	12	1-23 years	6	4	1

*These educators did not indicate the number of years teaching experience.

A number of educators participating in the school survey not only had educational experience in the civilian sector, but in the military sector as well. Over 80 percent of the educators served (and some continue to serve) in a variety of capacities in the armed services. Of the 133 educators having past or present affiliations with the military, 46 educators served in the Army; 46 in the Navy; 44 in the Air Force; and 1 in the Coast Guard (see Table 5). Some of the responses listed as "Other" to this item included the National Guard, Civil Air Patrol, College ROTC, Reserve, and Merchant Marine.

Also listed in Table 5 is the number of educators having military experience as trainers or developers of course materials (Appendix C, questionnaire Section I:6). Fifty-five (41%) of those affiliated with the military had this experience. Whereas, none of the respondents had experience as trainers or curriculum developers for the Coast Guard, their experiences in this capacity were almost evenly distributed across the Air Force, Army, and Navy.

TABLE 5
RESPONDENTS' MILITARY EXPERIENCES

Military Branch	Military Experience	
	Past or Present Military Affiliation (as many as apply) N=133	Military Trainer or Course Developer (as many as apply) N=55*
Air Force	44	22
Army	46	20
Coast Guard	1	-
Marine Corps	7	4
Navy	46	16
Other	10	-

*N=Fifty-five of the 133 educators having military experience also reported being a trainer or course developer for one or more of the military branches.

Of the 55 educators indicating "yes" to having experience as a trainer or course developer for the military (see Table 5), only 53 indicated the actual number of years experience they had in this capacity. There was a range of 1-30 years of experience as a trainer or course developer for this group of educators. The mode was two years of experience, while the mean was seven years of experience. The median for these educators was five years of experience in that capacity.

Selection and Acquisition of Military-Developed Curriculum Materials

Objective 2 - To determine whether existing information systems/sources are being used by civilian vocational educators to acquire curriculum materials.

Objective 3 - To identify criteria used by vocational educators for selection of military-developed curriculum materials.

Objective 4 - To determine the extent to which existing information systems/sources are used by civilian vocational educators to *obtain* military-developed curriculum materials.

Survey respondents indicated that curriculum materials developed by all the branches of the military have been selected for use (or are being used) in civilian educational programs (see Table 6). Of the 168 educators providing

this information, 67 percent used materials developed by the Air Force, 49 percent by the Army, 48 percent by the Navy, 4 percent by the Marine Corps, and 2 percent by the Coast Guard. The Air Force, Army, and Navy are the major developers of the military curriculum materials used in civilian schools.

TABLE 6
MILITARY SOURCES OF CURRICULUM MATERIALS
USED BY CIVILIAN EDUCATORS

Military Branch (As many as apply)	Respondents*	
	Number of Respondents	Percent (N=168)
Air Force	113	67%
Army	82	49%
Coast Guard	3	2%
Marine Corps	6	4%
Navy	81	48%

*Respondents checked one or more military branches which developed the curriculum materials used. Seven educators did not respond.

Educators became aware of and involved with curriculum materials developed by the different military services through a number of ways. Of the 171 educators responding to the questionnaire item (see survey questionnaire, Section II:1, in Appendix C), 74 educators (43%) selected and used those military-developed materials collected while affiliated with the military (see Table 7). Local school administrators provided 28 (16%) of the educators with access to military-developed curriculum materials. Twenty-six educators (15%) indicated that the military materials used were already included as a part of the schools' instructional materials when they were employed.

A number of "Other" means by which military curriculum became a part of educators' instruction were through the Community College of the Air Force, audiovisual catalogs, armed service recruiting offices, other staff members (some retired military persons), participation in research projects where military materials were tested for civilian applicability, and military reserve offices. The data point out, then, that more educators acquired and incorporated these materials into their instruction on their own initiative (either by personal collection or request to various sources) than by any other means.

Educators identified how they became involved with military-developed curriculum materials and with the services which developed the materials. Generally, most educators have some guidelines, requirements, or criteria by which they select curriculum materials. Therefore, educators were asked to identify the criteria that influenced (or would influence) their decision to select military-developed curriculum materials. All of the criteria listed in Table 8 influenced to some extent the educators' decisions to select these

TABLE 7
MEANS BY WHICH MILITARY-DEVELOPED CURRICULUM MATERIALS BECAME A PART OF EDUCATORS' INSTRUCTION

Means	Respondents	
	Number of Respondents (N=171)*	Percent of Respondents
Unknown; here when I came.	26	15%
Materials I used or knew about previously in the military.	74	43%
Provided by local school administrator at request of staff.	28	16%
Other	73	43%

*One hundred seventy-one of the 175 educators indicated one or more responses. Four educators did not respond.

TABLE 8
CRITERIA USED AS FACTORS IN SELECTING MILITARY CURRICULUM MATERIALS FOR USE IN CIVILIAN SCHOOL

Priority Order of Criteria Used as #1* Decision Factors	Number of Respondents** Identifying Criteria as #1 Decision Factor
Relative low cost of material	46
Materials in needed occupational areas not available from other sources	46
Materials match ability level of students (i.e., level of instruction)	40
Up-to-date material	34
Quality of civilian materials was less desirable than that of military	27
Availability of accompanying audiovisual support material	19
Scope of instruction (number of hours)	12
Availability of accompanying support hardware (equipment, mock-ups, etc.)	9

*1 = Major influence in my decision.
**Educators did not respond to all the criteria listed. Of those responding, some indicated more than one criterion as being a #1 influence in their decisions to select military curriculum materials.

materials for use in civilian schools. The low cost of materials and materials unavailable from other sources were tied as being the major factor that influenced responding educators' decision to select military-developed curriculum materials. The availability of audiovisual support materials was not a major influence in selecting military curriculum materials. The number of hours of instruction for any one course and the availability of accompanying support hardware appeared as criteria having the least amount of influence in educators' decision to select materials.

Respondents indicated their experience in acquiring military-curriculum materials from a number of sources/systems. Of the 96 educators who requested and acquired military curriculum materials via direct contact with the military, 72 educators used this source most frequently to acquire materials (see Table 9). Sixty-three percent of those obtaining materials from this source indicated that the materials were actually used. Seventy-nine educators had acquired materials from the Superintendent of Documents--the second most frequently used source to acquire materials. The sources used least to obtain military curriculum materials were Abstracts of Instructional and Research Materials in Vocational and Technical Education (AIM/ARM), state and regional curriculum laboratories, and the National Technical Information Service (NTIS).

TABLE 9
SOURCES WITH WHICH RESPONDENTS HAVE EXPERIENCE
IN OBTAINING AND USING MILITARY CURRICULUM MATERIALS

Sources	Total Number of Respondents Who Have Experience Obtaining Materials from Source	Number of Respondents Ranking Source As #1*	Number and Percentage of Respondents Using Material Obtained from Source
Direct Contact with Military Agency	96	72	61 (63%)
Superintendent of Documents, Washington, D.C.	79	38	28 (35%)
National Audiovisual Center (NAC)	30	14	8 (27%)
Educational Resources Information Center (ERIC)	29	12	5 (17%)
State Department of Education Supervisor/ Consultant	21	6	3 (14%)
Abstracts of Instructional and Research Materials in Vocational and Technical Education (AIM/ARM)	16	4	4 (25%)
National Technical Information Service (NTIS)	14	4	1 (29%)
State or Regional Curriculum Laboratory	16	2	4 (13%)

*1=Most frequently used source. Educators indicated only those sources with which they have experience in obtaining military curriculum materials.

The data displayed in Table 9 also shows the relationship between the number of educators obtaining curriculum materials from the various sources and the number indicating the use of those materials. With the exception of NTIS and AIM/ARM, the rankings of the sources used most frequently to obtain materials remained the same as the listing of sources from which military curriculum materials were being used. Even though larger numbers of educators obtained these materials from ERIC and state departments of education, the percentages of those persons who actually used the materials obtained was higher for the NTIS and AIM/ARM sources.

Due to the variety of responses recorded as "Other" sources used to acquire materials, this category was not included in Table 9. Some "Other" sources used by educators to acquire military curriculum materials were (1) Aerospace Education Foundation, (2) American Dental Association, (3) trade associations and manufacturers, (4) American Technical Education Association, (5) military recruiting offices, (6) university film libraries, (7) personal contacts with friends or students (former service persons), (8) government agencies other than the military, (9) participation in a pilot project using military curriculum materials, and (10) state surplus agencies. Additional sources (in the "Other" category) providing materials being used by educators included the American Medical Association Library, aircraft manufacturers, Junior ROTC programs, Community College of the Air Force, and the Armed Forces Institute of Pathology. It might be assumed, then, that all of the sources reported herein are available (to some degree) for use by civilian educators to acquire military curriculum materials, with direct contact with the military agency and the Superintendent of Documents, Washington, D.C., being those sources used most frequently.

Use of Military-Developed Curriculum Materials

Objective 5 - To determine the types, sources, and cost of military-developed curriculum materials being used in civilian schools.
Objective 6 - To identify problems and issues encountered by civilian schools in the *use* of military-developed curriculum materials.
Objective 7 - To identify problems and issues encountered by civilian schools in *obtaining* military-developed curriculum materials.

Responding educators used military curriculum materials in a variety of ways. Ninety-nine educators used these materials to supplement the basic text, and 43 used them as reference materials (see Table 10). Eighteen (10%) of the respondents used the materials as the basic text. Some educators reported that materials were used most "to help in course development," "as an integral part of the course," or as "self-instructional programmed instruction."

TABLE 10
USE OF MILITARY CURRICULUM MATERIALS AS A PART OF INSTRUCTION

Use of Materials	Number of Respondents (N*=170)	Percent of Respondents (N=170)
As Supplement to Text	99	58%
As Reference	43	25%
As Basic Text	18	10%
Other	12	7%

*Educators who indicated one or more responses.

Questionnaire item, Section II:6 also revealed information related to the actual use of military curriculum materials. The types, suppliers, sources, and cost of these materials as well as the number of hours of instruction for a course were identified. The types of military-developed instructional materials that educators recorded as being used in civilian educational programs included printed materials (teacher manuals, student manuals, programs of instruction), audiovisuals (films, transparencies, slides, audio tapes, videotapes), and hardware (mock-ups). Responding educators used more printed military curriculum materials than any other type. The materials used included 142 pieces of printed materials; 88 films, 21 transparencies; 14 slides; 10 audio tapes; 4 videotapes; and 2 mock-ups.

Printed materials (student manuals, teacher manuals, plans of instruction) were also identified as the most useful type of curriculum materials used by educators in their instruction (see Table 11). Training aids and hardware (equipment, mockups, displays) were second and third, respectively, in terms of their usefulness. Student manuals and plans of instruction were listed as the most useful kind of printed military materials used in instruction. Over 80 percent of the educators used these materials as supplements or references.

TABLE 11
USEFULNESS OF MILITARY CURRICULUM MATERIALS IN CIVILIAN INSTRUCTION

Type of Military Curriculum Materials	Number of Respondents Indicating Usefulness of Materials (N=171)*	Number of Respondents Indicating Materials Being Most Useful
Printed Materials		
Student Manuals	98	29
Plans of Instruction	75	29
Teacher Manuals	84	25
Training Aids	110	71
Hardware	51	18

*N=The 171 who ranked only those types of materials with which they had experience.

Most respondents did not provide cost information on the materials they had used in civilian schools. However, the reported cost of the various types of materials ranged from $1.25 - $5000, depending on the number and variety of materials acquired and used. Among those responding in ways other than numerical values, some indicated that the materials they used were free, provided on a rental or loan basis, or that the cost was unknown. The number of instructional hours required for any one occupational specialty ranged from two hours to three thousand hours.

The Air Force, Army, Navy, Coast Guard, Atomic Energy Commission, and Civilian Defense were among the suppliers of the materials being used. Major portions of the materials being used were obtained via direct contact with military agencies and/or through requests to the Superintendent of Documents, Washington, D.C. Table 9, page 22 identifies some of the other sources used to obtain military curriculum materials.

Some respondents have been more successful than others in acquiring the materials they needed. Thus, their satisfaction with the materials and/or the sources making those materials available varies based on individual needs and expectations. Respondents, therefore, identified some of the problems they have had with obtaining military-developed curriculum materials.

Table 12 shows which problems educators had experienced in obtaining military curriculum materials (questionnaire item, Section II:5a). Seventy-seven educators had difficulty identifying the source(s) of the needed materials. Over half of those experiencing this problem reported it was the major problem in obtaining military materials for use in civilian instruction. Too long a delay in receiving materials and unavailable descriptions of usable military-developed materials stood out as the second and third major problems with which educators contend.

TABLE 12
PROBLEMS IN OBTAINING MILITARY CURRICULUM MATERIALS

Problems	Total* Number of Respondents Experiencing the Problem	Number of Respondents Indicating Problem as #1**
1. Sources difficult to identify	77	50
2. Too long a delay to receive materials	61	29
3. Descriptions unavailable	66	25
4. Hardware too expensive	25	10
5. Non-print materials too expensive	22	7
6. Printed materials too expensive	30	5

*Only these respondents indicated having experience with the problems listed.

**1=Major problem in obtaining materials.

Cost of materials was not a major problem in obtaining military curriculum. The cost of printed materials was considered the least of educators' problems in obtaining materials. Other problems encountered in obtaining military curriculum materials were: outdated materials, insufficient loan time, unavailability of materials for public use, and lack of awareness.

Even though educators experienced a number of problems in obtaining military-developed curriculum materials, the materials had in fact been obtained and used. Therefore, problems encountered in using those materials were identified (see questionnaire item, Section II:5b).

TABLE 13
PROBLEMS IN USING MILITARY CURRICULUM MATERIALS

Problems	Total* Number of Respondents Experiencing the Problem	Number of Respondents Indicating Problem as #1**
Printed support materials not available	45	23
Support hardware (equipment, mock-ups) not available	44	23
Non-print (audiovisual) materials not available	39	19
Too much military jargon to be effective	38	13
Length of course does not conform to school schedule	30	13
Students do not relate to examples in text	31	8

*Only these respondents indicated having experience with the problems listed.
**1=Major problem in using military curriculum materials.

Table 13 shows that at least 30 educators had experience with each of the problems listed. The unavailability of support materials (printed, hardware, and audiovisual) was the major problem faced by educators in using military-developed materials. Even though 38 educators had a problem using military materials because of the amount of military jargon, only 13 (34%) felt the problem to be major. The length of military courses and students' inability to relate to examples in the military texts seemed to create the least amount of problems with using these materials.

Some educators also encountered additional problems in using military materials. A few of the problems mentioned were that some of the materials: (a) were outdated, (b) were of poor quality for reproduction videotapes, (c) lacked editing for civilian use, (d) contained course objectives different from those used in civilian instruction, (e) were too theoretical (printed materials), and (f) were too specific to equipment owned or operated by the military.

Curriculum Materials Needs

Objective 8 - To determine the priority occupational areas in which curriculum materials are needed.

Educators were asked to identify immediate and future needs for additional curriculum materials in their specialty area. First, educators identified job specialties in their area in which additional materials are presently needed (see questionnaire item, Section II:9). The specialties identified were grouped under the following 21 general curriculum areas (in priority order):

Electronics Occupations
Health Occupations
Metalworking
Automotive Service
Aviation
Construction and Maintenance Trades
Industrial Arts
Business and Office Occupations
Air Conditioning
Electrical Occupations
Instrument Maintenance and Repair
Agriculture
Law Enforcement and Corrections
Energy and Environmental Conservation
Diesel Mechanics
Woodworking
Business Machine Repair
Graphic Arts
Food Service
Appliance Repair
Distributive Education

A listing of the specific job specialties can be found in Appendix E.

Specific job specialties in which materials may be needed in the next 3-5 years were also requested. The following 16 general curriculum areas were identified (in priority order):

Electronics Occupations
Energy and Environmental Conservation
Health Occupations
Business and Office Occupations
Industrial Arts
Automotive Services
Air Conditioning and Refrigeration
Metalworking
Aviation

Construction and Maintenance
Electrical Occupations
Agriculture
Business Machine Repair
Appliance Repair
Diesel Mechanic
Distributive Education

A complete listing of job specialties is compiled in Appendix F. Because this sample consisted primarily of trade and industrial and health educators, caution should be exercised in interpreting the priority of the general curriculum areas and the generalizing beyond the trade and industrial and health categories.

SYSTEM Characteristics

Educators were asked to identify desirable characteristics or capabilities of a system which provides military curriculum materials (see questionnaire item, Section II:8). Table 14 shows that by far, potential users are most interested in a full description of the materials that the SYSTEM will provide. The SYSTEM's responsiveness to user suggestions was ranked fifth among the characteristics or capabilities the SYSTEM needs to include.

TABLE 14
SYSTEM CHARACTERISTICS

SYSTEM Characteristics	Total Number of Respondents	Number of Respondents Indicating SYSTEM Characteristics as Most Important
Full description of the materials	149	100
Ability to purchase portions of a course	127	31
Rapid turn around in filling orders (2-3 weeks)	127	16
Technical assistance in using materials	106	11
Responsiveness to user suggestions for changes in the system's services and/or products	92	6

Respondents identified additional characteristics that they felt a SYSTEM should possess. They felt that the SYSTEM should (a) provide accurate source/supplier information; (b) maintain current information; (c) provide immediate notification of audiovisual excess or surplus films, programmed materials, and technical manuals; (d) provide low cost materials; and (e) provide quality materials and materials not available from other sources.

Summary of Case Studies of Selected Sites

Visits were made to nine schools participating in the school survey and four schools and one state department of vocational education which pilot tested the survey instrument. In-depth information was gathered regarding the use and satisfaction with military curriculum materials; materials identification and acquisition; and suggestions, ideas and recommendations for the design of the SYSTEM. The information collected during these visits is summarized and presented herein. Case studies of the visitations are found in Appendix D.

Information gathered during visitations supported the mail survey data in terms of the kinds of military instructional materials used by educators in civilian schools. The materials used included films, slides, workbooks, programmed texts, transparencies, video tapes, plans of instruction, and surplus hardware. Most of the materials were developed by the Air Force, Army, and Navy.

Military curriculum materials were used to supplement the basic text or as references. Two educators had, on occasion, used military curriculum materials as the basic text. Slight modifications were sometimes made before using the material.

A number of reasons were given for participants' use of military curriculum materials. There was not always agreement on reasons for their use or satisfaction with military materials because the comments were based on individual experiences, needs, and environments. Some of the specific comments related to the use of military-developed curriculum materials were:

1. Materials had been well researched, developed, tested, and revised.

2. Materials were of good quality.

3. Materials were developed for instructional purposes and therefore were (are) appropriate for civilian use. They were criterion-referenced with specific goals and objectives. Very few modifications were necessary and the materials could serve as basic texts.

4. Materials were free, available on loan, or available for a small rental fee.

5. Materials were to-the-point and geared for various grade and ability levels.

6. Materials were basically current and technically accurate.

7. Materials related subject matter and examples in a fashion that was realistic and appropriate for use in the civilian community.

Site participants were generally pleased with the military materials used; however, there were a number of concerns. Some problems encountered in using these materials were that: (a) access to the materials was very limited; (b) the reading level of the materials was too advanced for some students; (c) the content of some of the materials was too specific to military equipment (in some cases, the equipment discussed in military course material was not available in vocational programs or the maintenance manuals for such equipment was difficult to obtain); (d) software needed to support a course was unavailable; and (e) some of the films contained pauses too lengthy for student response.

A few other concerns were mentioned that did not appear to represent consensus among site visit participants. For example, while some educators felt that military curriculum was very useful in civilian programs due to the narrow and specific nature of its goals and objectives, others felt that the curriculum was too specific and created problems in its use.

Whether or not materials should be modified was another controversial issue. Some felt that all modifications of military curriculum materials should be done by individual educators, based on their needs. Others felt that the SYSTEM making these materials available should assume responsibility for modification.

The term "military" and other military jargon, the technical and detailed nature of the materials, and the examples provided in the courses were also considered by some participants as problems in using military curriculum materials. It was felt that the military terminology often turned off both students and teachers and that the examples given in some of the materials did not relate to civilian situations. Some participants thought the materials were too technical and detailed to hold the interest of students. There were others, however, who did not view these as problems.

A number of concerns were identified regarding the identification and acquisition of military curriculum materials. Their concerns included:

1. The inadequate descriptions of military curriculum materials;

2. Not being aware of the availability of materials (what, where, how, etc.);

3. Unclear instructions for ordering materials;

4. The time delay between requesting and receiving military materials and the military "red tape" involved;

5. Difficulty in acquiring audiovisuals developed by the military, as well as some of the classified materials thought to be useful in civilian educational programs;

6. The outdated materials in some areas; and

7. The absence of a centralized mechanism for filling requests for military curriculum materials.

The major concerns of those visited seemed to be the unawareness of the availability of military curriculum materials and the difficulty in obtaining these materials. Educators also made suggestions and recommendations for consideration in the development and operation of a SYSTEM to make military curriculum materials available to civilian vocational and technical educators. These recommendations included the following:

1. Provide materials free of charge, on loan, or for a small handling fee.

2. Make quality master copies of materials available at the local level for reproduction.

3. Make known availability and acquisition information and procedures. Use various channels to publicize the materials available.

4. Include more high quality illustrations in the materials.

5. Make materials available in various formats.

6. Provide preview kits for review and selection of materials before ordering.

7. Provide adequate descriptions of the materials available.

8. Edit films to delete military information and pauses awaiting student response.

9. Include in the course 50 percent time for hands-on experiences.

10. Provide films on videotape.

11. Modify materials where needed.

12. Allow teachers to make modifications in the materials.

13. Conduct periodic updates of materials.

14. Develop a catalog that gives information on availability, acquisition, and use of materials.

15. Offer a course to potential users on how to use the SYSTEM.

16. Establish satellite stations or a central distribution center for making materials available.

17. Establish linkages and work cooperatively with other dissemination sources to make materials available.

In summary, those educators visited would like to have current and quality curriculum materials for review before purchase or for duplication, in a number of media formats, for as little cost as possible, and from a central source. One educator also indicated that a catalog on availability and acquisition of materials should be developed. Linkages with other sources/systems were suggested to avoid duplication of effort. Again, the information gathered during these visitations supported the findings of the mailed school survey questionnaire.

Summary of Findings

A mailed survey questionnaire was sent to 763 educators in 123 public and private secondary and post-secondary schools. Three hundred fifty-seven forms were returned with 175 providing usable data. These educators (175) represented 88 public and private secondary and post-secondary schools.

As part of the survey, site visits were conducted at twelve civilian schools and one state department of education. Information gathered during these visits were compiled and reported as case studies.

The purpose of both the mailed survey and site visits was to gather information regarding educators' experiences with the identification, selection, acquisition, and use of military curriculum materials. These activities were also conducted to collect information on the design of a SYSTEM to make military-developed curriculum materials available to educators in civilian educational programs. The findings of these two activities were used to provide user input for consideration in designing an effective SYSTEM.

The findings of the school survey are summarized under the following categories: Background information; Selection and Acquisition of Military Curriculum Materials; Use of Military Curriculum Materials; Curriculum Materials Needs; and SYSTEM Characteristics.

Background Information

Both male and female vocational and technical educators had experience using military-developed curriculum materials. The majority of the respondents were males over 40 years old. Only three educators were 25 years old or younger. Less than 7 percent of the educators were females.

Public secondary and public and private post-secondary schools had staff with experience using military materials. Approximately three-fourths of the respondents were employed in public post-secondary schools. One-fourth of the respondents were from secondary schools.

Respondents had expertise in all areas of vocational education. However, two-thirds of the educators represented the area of trade and industrial education, with health occupations being a distant second. They had an average of ten years teaching experience in their area of expertise and six years teaching experience with using military curriculum materials in their specialty area.

Over 75 percent of the respondents had military backgrounds. One hundred thirty-three served in one or more branches of the military (mostly in the Air Force, Army, and Navy). Fifty-three of the 133 educators also had an average of five years experience as a trainer or course developer for the military.

Respondents had experience using materials developed by all branches of the military with nearly two-thirds having used Air Force materials, one-half Army, and one-half Navy materials. Approximately 80 percent of the educators secured these materials through their own initiative by collecting them while still affiliated with the military or requesting materials from such sources as the armed service recruiting and reserve offices, audiovisual catalogs, the Community College of the Air Force, or retired military personnel. Only 15 percent of the educators found military curriculum materials already in the schools when employed.

Selection and Acquisition of Military Curriculum Materials

The following findings were identified in relation to educators' selecting and acquiring military curriculum materials.

Criteria for selection. Several criteria are used by educators in selecting military instructional materials. The relative low cost of materials was the major factor influencing educators to select military materials. A second factor was the unavailability of curriculum materials from other sources. Support materials (audiovisuals and hardware) availability was not a major influence in selecting military-developed curriculum materials.

Sources/systems available for acquisition of military curriculum materials. Over ten sources with which educators had experience in requesting military materials were identified: direct contact with a military agency, Superintendent of Documents, National Audiovisual Center, ERIC, regional or state curriculum laboratories, AIM/ARM, state departments of education, National Technical Information Service (NTIS), Aerospace Education Foundation, Community College of the Air Force, professional associations, university libraries, and others. Direct contact with the military was by far the major source providing materials, followed by the Superintendent of Documents.

This probably reflects the military background of over 80 percent of the respondents who perhaps were aware of the proper channels to pursue in obtaining materials. Also, the materials secured from these two sources were most often used following acquisition.

Problems with acquisition of military curriculum materials. Approximately 44 percent of the respondents had difficulty in identifying the sources which make military curriculum materials available. The amount of delay between requesting and receiving military materials was the second major problem in obtaining these materials. Relative to the other factors, cost of the materials did not seem to be a major problem in deciding to obtain military instructional materials.

Use of Military Curriculum Materials

A number of findings were identified with regard to the use of military curriculum materials.

Kinds and use of military curriculum materials. Military-developed printed materials (teacher manuals, student manuals, programs of instruction), audiovisuals (films, slides, transparencies, audio tapes, videotapes) and hardware were used by civilian vocational and technical educators. Respondents used more printed materials and found them more useful than any other kind of curriculum material. Over 80 percent of the respondents used these materials for supplements or references, while only 10 percent used them as basic texts.

Satisfaction with using military curriculum material. A number of reasons were given for general satisfaction with military curriculum materials. Educators were generally satisfied with military-developed instructional materials because the materials were: free, available on loan, or available at minimal cost; of good quality; appropriate for a variety of target audiences; adaptable with very few modifications; applicable to civilian use due to criterion-referenced format; and realistic in providing examples and content appropriate for the civilian sector.

Problems in using military curriculum materials. Although respondents were generally pleased with the military materials used, there were several problems encountered in using these materials. The absence of support materials regardless of kind (printed, hardware, and audiovisual support materials) was the major problem respondents had with using military curriculum materials. The presence of military jargon in the texts, the length of military courses, and students' not being able to relate to the examples in the text were not perceived as major problems.

Curriculum Materials Needs

Educators have an immediate need for current curriculum materials in 21 occupational areas. They are: electronics occupations, health occupations, metalworking, automotive service, aviation, construction and maintenance trades, industrial arts, business and office occupations, air conditioning, electrical occupations, instrument maintenance and repair, agriculture, law enforcement and corrections, energy and environmental conservation, diesel mechanics, woodworking, business machine repair, graphic arts, food service, appliance repair, and distributive education. See Appendix E for a listing of job specialties.

Emerging (next 3-5 years) occupations seem to parallel current priorities with the exception of energy and environmental conservation. Perceived emerging occupations priorities are: electronics occupations, health occupations, energy and environmental conservation, business and office occupations, industrial arts, automotive services, air conditioning and refrigeration, metalworking, aviation, construction and maintenance, electrical occupations, agriculture, business machine repair, appliance repair, diesel mechanic, and distributive education. Appendix F lists the specific job specialties needing materials in the next three to five years.

Because the sample consisted primarily of trade and industrial educators, it is felt that the curriculum priority areas identified do not adequately reflect the needs in all of the vocational education service areas. Therefore, it is suggested that the priority areas identified in this report be given cautious consideration when determining priority areas needing materials. For a more accurate listing of such priorities, see the companion project report entitled, *Military Curriculum Materials Identification, Selection, and Acquisition Strategies and Procedures.*

SYSTEM Characteristics

Survey respondents were asked to identify characteristics which they felt would be most important in a SYSTEM designed to make military curriculum materials available to civilian vocational and technical educators. They indicated that the SYSTEM should (a) provide a full description of available materials; (b) be flexible in the amount of course material purchasable (a total course or portions of a course); (c) provide rapid turn around in filling request; (d) provide technical assistance in using materials; and (e) provide a mechanism for response to user feedback. Additional suggestions mentioned during the site visitations were that the SYSTEM should provide master copies of materials for duplication at the local level; materials in a variety of formats; preview kits for review of materials prior to purchase; periodic updates of materials; and a catalog on availability, acquisition, and use of military curriculum materials.

CHAPTER V

CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

Conclusions

The following conclusions are based upon the findings presented in previous sections of this report. The conclusions are:

1. The large majority of the respondents using military-developed curriculum materials:
   a. had military experience,
   b. used military material in trade and industry areas,
   c. were middle-aged males, and
   d. were from post-secondary institutions.
2. Most respondents selected and acquired military-developed curriculum materials:
   a. primarily developed by the Air Force, Army and Navy,
   b. directly from the military services,
   c. on the basis of low cost and non-availability from other sources, and *not* on the availability of audiovisual and support materials.
3. Most of the respondents indicated that the greatest problem in obtaining materials was identification of their source. Too expensive materials was not a major factor relative to the other factors.
4. Civilian users of military-developed curriculum materials:
   a. use them primarily as supplements or references,
   b. used printed more than audiovisual or hardware, and
   c. most often used materials acquired from the military or Superintendent of Documents.

5. Many of the respondents indicated that absence of support material was the major limiting factor in the use of military-developed curriculum materials.

6. Data collected regarding present and future curriculum needs are inconclusive due to the unequal vocational representation in the sample (three-fourths of the educators represented trade and industry and health occupations). The priorities identified in this survey may be useful in establishing priorities in trade and industry and health. We refer the reader to a companion publication, *Military Curriculum Materials Identification, Selection, and Acquisition Strategies and Procedures.* This publication has identified priorities based on responses by state curriculum coordinators and deans of instruction in post-secondary schools.

7. SYSTEM characteristics were viewed by respondents in the following order of importance:

   a. full description of material,

   b. ability to purchase portions of a course,

   c. maximum of 2-3 weeks turn around in filling orders,

   d. technical assistance in using material,

   e. responsiveness to user suggestions in changes in the SYSTEM.

Implications and Recommendations for SYSTEM Design

Based on the findings and conclusions of this study, the following implications were drawn and recommendations made:

1. Since most of the respondents had military experience and represented largely post-secondary institutions, the SYSTEM needs to make more vocational and technical educators aware of military-developed curriculum materials, especially in grades nine through twelve; therefore, we *recommend* that a SYSTEM be designed to publicize the availability of military-developed curriculum materials (through brochures, catalogs, workshops, conferences, exhibits, presentations, and professional literature announcements).

2. Even though respondents using military-developed curriculum materials typically have a military background and are more aware of the existence and availability of military curriculum materials than the average vocational educators who make lack this experience, they had difficulty in identifying the source for obtaining the material. Therefore, we *recommend* that the SYSTEM create awareness of and provide ready access to materials from all military services to all vocational educators.

3. Respondents indicated that low cost of materials was a major influence in deciding to select military-developed curriculum materials; therefore, we *recommend* that the SYSTEM provide these materials at a price which is competitive with similar materials available in the civilian sector.

4. Since respondents used military-developed curriculum materials primarily as supplements or references, it indicates that they do not require all printed or audiovisual materials in the course; therefore, we *recommend* that course material be made available in part as well as a total curriculum package.

5. Since respondents indicated that printed materials are more useful than audiovisual materials and apparently were used independently, there appears to be a greater demand for printed material and no significant problem in using the material separately; therefore, we *recommend* that the first priority in implementing the SYSTEM be to make printed material available immediately, followed by the audiovisual materials.

6. The sample used to secure curriculum needs priorities was biased toward trade and industry and health occupations. This strongly suggests that additional and continuous contact be maintained with representatives of all the vocational education service areas to determine curriculum materials needs; therefore, we *recommend* that the SYSTEM include a capacity for continuously assessing user needs.

7. Based upon respondent indications of the importance of the SYSTEM characteristics needed--(a) full description of materials, (b) ability to purchase portions of a course, (c) maximum of 2-3 weeks turn around in filling order, (d) technical assistance in using material, and (e) responsiveness to user suggestions for changes in the SYSTEM--the degree to which these needs are met will determine the effectiveness of the SYSTEM in satisfying the needs of users; therefore, we *recommend* that in the design of the SYSTEM these characteristics be incorporated. When SYSTEM alternatives are considered, the degree of emphasis within each of the five areas may be varied, but all areas need to be covered to some extent.

Recommendations for Further Research

The sample in this survey primarily represented males with military backgrounds related to trade and industrial and health occupations education. Therefore, we recommend that surveys of more representative groups of vocational educators be conducted to determine:

1. The perceptions civilian vocational teachers have of military-developed curriculum materials,

2. The extent of awareness and knowledge vocational teachers have regarding military-developed curriculum materials,

3. Modifications (if any) which teachers with no military experience would make in military-developed curriculum materials, and the relationship of teaching techniques and modifications made,

4. Teacher satisfaction and dissatisfaction associated with the use of previously *unmodified* and *modified* military-developed curriculum materials, and

5. The demand for military-developed curriculum materials by civilian teacher as a result of dissemination activities aimed at creating awareness, interest, and trial of military curriculum materials.

APPENDIX A

Form for Making School Survey Telephone Calls

Guidelines for Calling--School Survey

APPENDIX A

FORM FOR MAKING SCHOOL SURVEY TELEPHONE CALLS

Yes ☐ Code Number _____

No ☐ Category _____

Date _____

Name of Coordinator _____

School _____ Phone _____ (AC)

Address _____ No. Street

_____ City State Zip

No. of Staff	Military Branch (Optional)	Call Back Dates	Comments

APPENDIX A

GUIDELINES FOR CALLING--SCHOOL SURVEY

1. *Person-to-person* to the name given as an initial contact or to one of the following:

Secondary High School	*Post-secondary School*
Director or Supervisor of Vocational Education	Director of Vocational Education
Curriculum Coordinator	Dean of Instruction
Principal	Chm. of Vocational Education in the College (or School) of Education

If these titles do not exist, speak to the secretary or operator, explain the nature of the call, and request assistance in locating an appropriate person.

2. *Give:*

a. Caller's name
b. The Center for Vocational Education, The Ohio State University
c. City, state (optional)
d. Purpose for calling (give background of project, with emphasis on the task of conducting a mail survey of schools, etc.)

Ask:

a. If some member(s) of the *school staff is in fact using military materials* (if unknown, as if party is willing to find out, if interested).
b. *If interested* in participating in the survey.

3. If interested in participating, ask for:

a. *name of a coordinator and contact person for future communications* (note: in every case so far that person has been the one with whom I spoke initially--principal, director, chairman of division).
b. *the number of staff using the materials*, and nature of materials (Navy, Air Force, etc.) if possible, but optional. This will probably require a call back. If the party prefers calling back, set a time and ask the person to call you COLLECT.
c. *correct address*, spelling of names, and title.

4. Record all calls (outgoing and collect returns) on montly telephone log sheet.

APPENDIX B

List of Schools and Agencies Selected to Participate in the School Survey and Those with Applicable Response(s) to the School Survey Questionnaire

APPENDIX B

List of Schools and Agencies Selected to Participate in the School Survey and Those with Applicable Response(s) to the School Survey Questionnaire

Alabama

Alabama Aviation and Technical College*
Ozark

Council Treholm State Technical College
Montgomery

Muscle Shoals Technical Institute
Muscle Shoals

Alaska

North Star Borough School District
Fairbanks

Arizona

Pima Career Guidance Project
Tucson

Red River Vocational Technical School*
Hope

Southwest Technical Institute*
East Camden

California

Compton Adult School*
Compton Unified School District
Compton

Encinal High School*
Alameda

San Diego State University*
Industrial Art Department
San Diego

Solano Community College*
Suisun City

Toyoto USA, Inc.
Torrence

Colorado

Aurora Vocational School*
Aurora

Boulder Valley Vocational Technical Center*
Boulder

Metropolitan State College*
Denver

University of Northern Colorado*
Greeley

Connecticut

AI Prince Regional Vocational Technical School
Hartford

Bullard Vocational School*
Bridgeport

Eli Whitney Technical School*
Hamden

*School with applicable response(s) to school survey questionnaire.

H. C. Wilcox Vocational Technical School*
Meriden

District of Columbia

Bell Vocational High School*
Washington

Florida

Broward Community College*
Ft. Lauderdale

Cocoa Beach High School
Cocoa Beach

Daytona Beach Regional Airport*
Daytona Beach

Lively Vocational-Technical Center
Tallahassee

Maynard Evans High School*
Orlando

Satellite High School
Satellite Beach

Georgia

Atlanta Area Technical School*
Atlanta

Hawaii

Hawaii Community College
Hilo

Idaho

Idaho State University Area Vocational-Technical School
Pocatello

Illinois

Harper College*
Palatine

Lewis University*
Lockport

Triton College*
River Grove

Indiana

Indiana Vocational Technical College*
Columbus

ITT Technical Institute*
Indianapolis

Iowa

Des Moines Area Community College*
Inkeny

Hawkeye Institute of Technology*
Waterloo

Iowa Central Community College
Fort Dodge

Iowa Western Community College*
Council Bluffs

North Iowa Area Community College*
Mason City

Northwest Iowa Technical College*
Sheldon

Perry Community High School*
Perry

Scott Community College*
Bettendorf

Southwestern Community College*
Creston

Kansas

Colby Community Junior College*
Colby

Louisiana

Southern University*
Baton Rouge

Massachusetts

Turner Falls High School*
Montague

Michigan

Northern Michigan University*
Marquette

Minnesota

Columbia Heights Senior High School*
Columbia Heights

Northwestern Electronics Institute*
Minneapolis

St. Cloud Area Vocational Technical Institute*
St. Cloud

Skyline School of Aviation Maintenance, Inc.
Minneapolis

South Central Vocational Center*
Blue Earth

Vocational-Technical Institute, District 916*
White Bear Lake

Mississippi

Greeneville-Green County Vocational High School*
Greeneville

Missouri

Area Vocational-Technical School*
Rolla

Franklin Technical School*
Joplin

Wayneville Area Vocational School
Wayneville

Montana

Helena Vocational Technical Center*
Helena

New Jersey

Bridgewater-Raritan High School, East
Martinsville

Cape May County Vocational-Technical Center*
Cape May Court House

Rutgers State University*
New Brunswick

Union County Technical Institute*
Scotch Plains

New Mexico

Los Cruces Community College
Los Cruces

New York

Automotive High School, Brooklyn
New York

Cornell University, Industrial Research Laboratory*
Ithaca

Dutchess Community College*
Poughkeepsie

North Carolina

Appalachian State University*
Boone

Catawba Valley Technical Institute*
Hickory

Central Piedmont Community College*
Charlotte

Cobarrus County Schools
Concord

Onslow County Schools, District 2*
Jacksonville

North Dakota

Ashley High School*
Ashley

Bismark Vocational Technical Center*
Bismark

North Dakota State School of Science*
Wahpeton

Ohio

Bowling Green State University
Bowling Green

ITT Technical Institute*
Dayton

North Central Technical College*
Galion

Terra Technical College*
Fremont

Oregon

Grants Pass High School
Grants Pass

Jefferson High School*
Portland

Portland Community College*
Portland

Pennsylvania

Admiral Perry Area Vocational Technical School*
Ebensburg

Altoona Area Vocational Technical School
Altoona

Greater Johnstown Area Vocational Technical School
Johnstown

Jefferson County Dubois Area Vocational-Technical School*
Reynoldsville

Lackawanna County Area Vocational Technical School*
Scranton

Middle Bucks County Area Vocational Technical School
Jamison

Peabody High School*
Pittsburg

Somerset County Area Vocational Technical School*
Somerset

South Carolina

Clemson University*
Clemson

Greenville Technical College*
Greenville

Kershaw County Vocational Center
Camden

Piedmont Technical College*
Greenwood

South Dakota

Lake Area Vocational Technical School*
Watertown

Tennessee

State Technical Institute at Memphis
Memphis

Weakley County School System*
Dresden

Texas

James Connally Campus
Texas State Technical Institute*
Waco

Paris Junior College*
Paris

Texas Technical Institute
Amarillo

Utah

Dixie College
St. George

Snow College*
Ephraim

Utah State University*
Logan

Utah Technical College at Provo*
Provo

Utah Technical College at Salt Lake*
Salt Lake City

Weber State College*
Ogden

Vermont

Addison County Vocational Center*
Middleburg

Randolph Area Vocational Center*
Randolph

Rutland Area Vocational-Technical Center*
Rutland

University of Vermont
Burlington

Virginia

Dobney S. Lancaster Community College
Clifton Forge

Thomas Nelson Community College*
Hampton

Virginia Polytechnic Institute and State University
Blacksburg

Washington

Evergreen State College
Olympia

Seattle Central Community College*
Seattle

Seattle Opportunity Industrialization Center, Inc.
Seattle

Washington State University
Pullman

West Virginia

Ben Franklin Career and Technical Education Center*
Dunbar

South Branch Vocational Center
Petersburg

Wisconsin

Fox Valley Technical Institute*
Appleton

Lakeshore Technical Institute*
Cleveland

University of Wisconsin--Stout, School of Industry and Technology*
Menomie

Wisconsin Indianhead Technical Institute
New Richmond

APPENDIX C

Survey Questionnaire Form

Cover Letter

Follow-up Letter to Contact Persons

OMB 51 - S75069
OE 441

SURVEY OF

MILITARY-DEVELOPED CURRICULUM MATERIALS UTILIZATION IN VOCATIONAL EDUCATION

PLEASE READ!

The Center for Vocational Education is conducting a survey of school personnel who have experience with the use of military curriculum materials in civilian schools. Data gathered through the survey will assist in the development of a system for making these materials readily available to civilian vocational programs. If you have used (are using) military curriculum materials, please complete the attached survey form according to instructions for each item and return in the preaddressed, postpaid envelope by Friday, December 12, 1975. Your interest and assistance in providing this information are very much appreciated.

THE CENTER FOR VOCATIONAL EDUCATION
The Ohio State University · 1960 Kenny Road · Columbus, Ohio 43210
Tel: (614) 486-3655 Cable: CTVOCEDOSU/Columbus, Ohio

Code No. _____
(For follow-up
purposes only)

SURVEY OF

**MILITARY-DEVELOPED CURRICULUM MATERIALS
UTILIZATION IN VOCATIONAL EDUCATION**

SEX

- ☐ Female
- ☐ Male

AGE

- ☐ 25 or under
- ☐ 26 – 39
- ☐ 40 – 64
- ☐ 65 or over

PAST OR PRESENT MILITARY AFFILIATION
(check as many as apply)

- ☐ Air Force
- ☐ Army
- ☐ Coast Guard
- ☐ Marines
- ☐ Navy
- ☐ None
- ☐ Other _____ (please specify)

SECTION I – BACKGROUND INFORMATION

1. Within which of the following types of schools do you work?
(check one most appropriate)

   ☐ Public secondary school (grades 9-12)

   ☐ Private post-secondary school (grades 13-14)

   ☐ Public post-secondary school - - - - - - - - - - - to be more specific, please check one of the following:
   - ☐ Vocational-Technical (grades 13-14)
   - ☐ Technical Institute (grades 13-14)
   - ☐ Junior College (grades 13-14)
   - ☐ Four-year University or College (grades 13-16)
   - ☐ Other _____ (please specify)

2. Which of the following vocational service areas represents your primary specialty? (check one most appropriate)

   - ☐ Business and Office
   - ☐ Distributive
   - ☐ Health Occupations
   - ☐ Home Economics
   - ☐ Trade and Industrial
   - ☐ Vocational Agriculture
   - ☐ Other _____ (please specify)

3. How many years of teaching experience have you had in the primary specialty area checked in number 2?
_____ years

4. How many years of teaching experience have you had using military-developed curriculum materials in the primary specialty area checked above? _____ years

5. From which branch(es) of the military have you used military-developed materials in the primary specialty area checked in number 2? (check as many as apply)

- ☐ Air Force
- ☐ Army
- ☐ Coast Guard
- ☐ Marines
- ☐ Navy

6. Do you have experience as a trainer or as a developer of course materials for the military? (check one)

- ☐ Yes; _____ years — Go to question 7.
- ☐ No — Go to Section II.

7. In which branch(es) of the military did you serve as a trainer or course developer? (check as many as apply)

- ☐ Air Force
- ☐ Army
- ☐ Coast Guard
- ☐ Marines
- ☐ Navy

SECTION II – CURRICULUM MATERIALS NEEDS

1. How did military curriculum materials become a part of your instruction?

- ☐ Unknown; here when I came.
- ☐ Materials I used or knew about previously in the military.
- ☐ Provided by local school administrator at request of staff.
- ☐ Other _____
  (please specify)

2. Check how military curriculum materials are (were) used most as a part of your instruction for any one course. (check only one)

- ☐ As basic text
- ☐ As supplement to text
- ☐ As reference
- ☐ Other _____
  (please specify)

3. Please rank the following components or parts of military curriculum materials as to their usefulness in your instruction (1 = most useful). Enter NA in the space if not applicable.

- _____ Programs of Instruction
- _____ Student Manuals
- _____ Teacher Manuals
- _____ Training Aids (films, transparencies, tapes, etc.)
- _____ Hardware (equipment, mock-ups, displays, etc.)
- _____ Other _____
  (please specify)

4. Rank those sources listed below with which you have had experience in obtaining military-developed curriculum materials (1 = most frequently used source). Enter NA in the space if you have had no experience with the source.

_____ Abstracts of Instructional and Research Materials in Vocational and Technical Education (AIM/ARM)
_____ Educational Resources Information Center (ERIC)
_____ National Technical Information Service (NTIS)
_____ National Audiovisual Center (NAC)
_____ Superintendent of Documents, Washington, D.C.
_____ Direct contact with military agency
_____ State or regional curriculum laboratory
_____ State department of education supervisor/consultant
_____ Other _____
(please specify)

5. Please rank the following problems encountered in obtaining and using military-developed curriculum materials (1 = major problem). Enter NA in the space if you have had no experience with the problem(s) listed.

(a) Problems in obtaining military materials: Comments:

_____ Source difficult to identify
_____ Descriptions unavailable
_____ Too long a delay to receive materials
_____ Print materials too expensive
_____ Non-print (audiovisual) materials too expensive
_____ Hardware (equipment, mock-ups) too expensive
_____ Other _____
(please specify)

(b) Problems in using military materials: Comments:

_____ Length of course does not conform to school schedule
_____ Too much military jargon to be effective
_____ Printed support materials not available
_____ Non-print (audiovisual) materials not available
_____ Support hardware (equipment, mock-ups) not available
_____ Students do not relate to examples in text
_____ Other _____
(please specify)

6. For those military materials previously used or being used in your school, please fill in the appropriate spaces below. Please use the following abbreviations to indicate the military branch(es) supplying the materials listed: Air Force - AF, Army - AR, Coast Guard - CG, Marines - MR, Navy - NV.

Occupational Area	Hrs. of Instruction	Type of Instructional Material (check)						Cost	Military Branch Supplying Materials	*Source
		Printed	Slide	Film	Audio Tape	Transparencies	Other (specify)			
Lathe Operator (not trade and industrial) (Example)	240	√		√	√	√		$375	AF	1

*List the number of the appropriate source(s) from below which applies to the type of material checked:

1. Abstracts of Instructional and Research Materials in Vocational and Technical Education (AIM/ARM)
2. Educational Resources Information Center (ERIC)
3. National Technical Information Service (NTIS)
4. National Audiovisual Center (NAC)
5. Superintendent of Documents, Washington, D.C.
6. Direct contact with military agency
7. State or regional curriculum laboratory
8. State department of education supervisor/consultant
9. Other _____ (please specify)

7. The following are criteria often used as factors in selecting military curriculum materials for use in civilian school settings. Please prioritize the following factors in terms of their influence upon your decision to select military curriculum materials (1 = major influence in my decision).

Decision Factor

_____ Availability of accompanying support hardware (equipment, mock-ups, etc.)
_____ Availability of accompanying audiovisual support material
_____ Materials match ability level of students (i.e., level of instruction)
_____ Up-to-date material
_____ Scope of instruction (no. of hours)
_____ Materials in needed occupational areas not available from other sources
_____ Quality of civilian materials was less desirable than that of military
_____ Relative low cost of material
_____ Other _____
(please specify)
_____ Other _____
(please specify)
_____ Other _____
(please specify)
_____ Other _____
(please specify)
_____ Other _____
(please specify)

8. Rank in order of importance, the following characteristics of a system which is to be designed to provide curriculum materials (1 = most important).

_____ Full description of the materials
_____ Rapid turn around in filling orders (2-3 weeks)
_____ Technical assistance in using materials
_____ Ability to purchase portions of a course
_____ Responsiveness to user suggestions for changes in the system's services and/or products
_____ Other _____
(please specify)

9. Please list in priority order (1 = highest priority), 5-10 job specialties in your area in which additional curriculum materials are needed. Please be as specific as possible. For example:

A. Cook
B. Dental Assistant
C. Lathe Operator

1. _____
2. _____
3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

10. Please identify and list emerging occupational areas (e.g., laser technology, cryogenics, solar energy) for which instructional materials will be needed in the next 3-5 years. Rank the areas listed in order of expected impact on vocational education (1 = greatest impact).

Rank	Occupational Area
_____	_____ (please specify)
_____	_____ (please specify)
_____	_____ (please specify)
_____	_____ (please specify)
_____	_____ (please specify)

11. Please list other schools, businesses, individuals, etc., who have acquired and/or are using military curriculum materials.

12. Comments:

13. Would you be willing for project staff members to come on a site visit to your school for in-depth follow-up?

☐ Yes ☐ No

If yes, please indicate your name and other appropriate information in the space below.

NAME _____

TITLE _____

AGENCY/SCHOOL _____

ADDRESS _____
Number Street

_____
City State Zip

PHONE _____
Area Code

Please return this questionnaire in the postpaid envelope provided to:

Dr. Wesley E. Budke
The Center for Vocational Education
The Ohio State University
1960 Kenny Road
Columbus, Ohio 43210

THANK YOU FOR YOUR HELP!

APPENDIX C
COVER LETTER

THE CENTER FOR VOCATIONAL EDUCATION
The Ohio State University • 1960 Kenny Road • Columbus, Ohio 43210
Tel: (614) 486-3655 Cable: CTVOCEDOSU/Columbus, Ohio

November 26, 1975

Dear Educator:

We hope you will forgive us for the indirect way we contacted you regarding your willingness to complete the attached form related to use of military curriculum materials in your instructional program. We have had a very difficult time in identifying school systems in which materials are in use and, by necessity, we had to identify a coordinator in each school who would assist us by distributing forms to instructors like yourself. By making contact with you in this manner, we would hope to be communicating with you in a more personal way regarding any additional suggestions or questions you have about our project.

> **If you have no experience with using military materials, please write "NA" on the front cover of the form and return to us in the postpaid envelope provided. (Knowing that the form is not applicable to you for some reason will save us the expense of follow-up long distance calls to your school.)**

Your cooperation is requested in completing the attached form. The information you furnish will assist us in developing a centralized system to identify, acquire, and disseminate military-developed curriculum materials. Of course, your participation is entirely voluntary.

Several research reports have clearly shown that a number of curriculum materials developed for military use are also of potential use to civilian vocational education programs. Curriculum materials from several military branches have already undergone testing and revision for adaptation to civilian vocational education programs. Yet, there is no centralized operating system to identify, acquire, and disseminate these materials to civilian schools.

Data obtained from this form will be tabulated and analyzed to determine the consensus with regard to selection criteria and practical problems encountered in obtaining and using military curriculum materials. The analysis will be descriptive and aggregate in nature. No individually identifiable data will be reported.

May we take this opportunity to thank you for your cooperation. If you have any questions, please feel free to call Mrs. Earnestine Dozier of my staff at 614-486-3655. Please call collect. If your schedule permits, please return the completed form to us by Friday, December 12.

Sincerely,

Wesley E. Budke
Project Director

WEB/kk

Enclosures

APPENDIX C
FOLLOW-UP LETTER TO COORDINATORS

THE CENTER FOR VOCATIONAL EDUCATION
The Ohio State University • 1960 Kenny Road • Columbus, Ohio 43210
Tel: (614) 486-3655 Cable: CTVOCEDOSU/Columbus, Ohio

December 12, 1975

Dear Educator:

We want to take this opportunity to check with you on the status of the survey of military curriculum materials' use in your school. If you or other personnel in your school have already completed and returned the questionnaire(s) we sent a few days ago, please pardon this reminder.

If questionnaires have not been completed, we ask for your help in getting them back to us before the Christmas holiday recess. Please "pass the word" to others in your school if we sent you more than one form.

Thanks for your help! Have a happy Holiday Season and a productive New Year!

Sincerely,

Wesley E. Budke
Project Director

WEB/sam

APPENDIX D

Participants in Site Visits for Survey
Report Case Studies

Case Studies of Selected Sites

APPENDIX D

Participants in Site Visits
for Survey Report Case Studies

Dr. William R. Deutsch, Specialist
in Instruction Technology and
Research
Compton Adult School
Compton, California

Mr. Richard J. Ferree, Assistant
Professor
San Diego University
San Diego, California

Brother Vincent Neil, Chairman
Aviation Department
Lewis University
Lockport, Illinois

Mr. Henry Horowitz, Assistant
Professor
Dutchess Community College
Poughkeepsie, New York

Mr. Lewis Bachtel, Director
Mr. Milton Loeding, Supervisor
Mr. John Mathews, Instructor
Mr. Robert E. Jones, Instructor
Cuyahoga Valley Junior
Vocatonal School
8001 Brecksville Road
Brecksville, Ohio

Mr. Norbert Wethington, Director
of Evening Division
Terra Technical College
Fremont, Ohio

Mr. Virgil Hollis, Instructor
North Central Technical College
Galion, Ohio

Mr. Carle J. Khunle, Jr. Instructor
Mr. J. D. Smith, Instructor
Texas State Technical Institute
James Connally Campus
Waco, Texas

Mr. Walter Ulrich, State Director of
Vocational Education
Dr. David Gailey, State EPDA Coordinator
for Vocational Education
State Board of Vocational Education
136 E. South Temple
Salt Lake City, Utah

Mr. Joseph J. Baker, Instructor
Utah Technical College
4600 S. Redwood Road
Salt Lake City, Utah

Mr. Roger D. King, Instructor
Jordon High School
Sandy, Utah

Mr. Bruce Palmer, Instructor
Randolph Vocational Center
Randolph, Vermont

Mr. Mel DeSwarte, Electronics Instructor
Mr. Marvin Schroder, Curriculum
Specialist
Lakeshore Technical Institute
Cleveland, Wisconsin

APPENDIX D

Case Studies of Selected Sites

Compton, California

Contact

Dr. William R. Deutsch, Specialist in Instructional Technology and Research, Compton Adult School, Compton, California.

School Description

The Compton Adult School is a part of the Compton Unified School District. The school is made up of five centers: (1) the Edward G. Chester Adult Center, (2) Compton Adult Center, (3) Compton Senior High School, (4) Thomas Jefferson Elementary School, and (5) the basic education program. These five centers enroll approximately 5400 adult students in courses, such as basic education, classes for handicapped, drama, food preparation, G.E.D. preparation, multi-clerical/secretarial science, nurses' assistant, civic education, homemaking, music, business, and academic courses. The greatest percentage of the students enrolled in the program are working toward a high school diploma or attempting to develop skills which might make them employable in areas such as the food service industry or nursing. As a rule, the courses are not vocational in nature, but only attempt to provide some basic kinds of information. Tuition is free for non-high school graduates and high school graduates need only pay a very small fee for an activity card and library privilege. The Compton Adult School also has a placement program which operates in conjunction with the educational program of the school.

Kind and Use of Material

The Compton Adult School has acquired Army and Navy technical training material related to electricity, engine repair, and fire fighting. These are printed materials and currently only some programmed instruction in electricity is being used. The instructional material has not been modified, but simply duplicated and bound in the form in which it was received. There is other electricity material available but it is only used for reference. Overall, use of military material is minimal.

Strengths

Dr. Deutsch especially liked the military programmed instructional material because it is well tested and he has confidence in its design. They would be willing to review any printed or audiovisual materials developed by the military.

Limitations

The major limitation to the use of military training materials within the Compton Adult School is that it is too advanced for the adults who have very poor reading skills. In addition, the teachers do not have sufficient time to modify the material so that they apply specifically to their course of instruction.

General Comments and Suggestions

1. Additional programmed instructional material is needed in all vocational areas.

2. If a system is designed to provide military materials to civilian schools, perhaps they could be provided on a loan basis or for a small handling fee so that schools could preview the material and then duplicate it themselves.

3. There is a definite need to publish the availability or sources from which the military training materials are available.

4. Materials must be modified for the teachers because they will not take the time to modify their own. If this is not done for them, the material will generally stay on the shelf as has been the experience at the Compton Adult School.

San Diego, California

Contact

Mr. Richard J. Ferree, Assistant Professor of Electronics, Industrial Studies Department, San Diego State University, San Diego, California.

School Description

San Diego State University is one of nineteen in the California state university and college system. The current enrollment is 31,000 students (accepted from the top third of California's high school graduates). The electronics courses are taught in the Industrial Technology Department of the College of Professional Studies at San Diego State University.

Kinds and Use of Materials

Mr. Ferree uses several films on electronics which he borrows from the U.S. Navy film library in downtown San Diego. He also has some military

electronics equipment which has been purchased from surplus stores or acquired through other kinds of arrangements. He has a few manuals which he uses for reference, but they are not used extensively. These are materials that he acquired while in the Navy and used them primarily while developing his electronics program. Dr. Aaron Rasmussen is a metallurgy professor in the Industrial Studies Department. He uses an Addison-Wesley program text on "Basic Principles of Gating," "Basic of Risering," and "Basic Metallurgy" developed in conjunction with the American Foundryman's Society Training and Research Institute, all of which are being used by the Navy. Overall, the military training materials were not being used as a core or serving as a basis for the instructional program at San Diego State University, but used to supplement existing materials.

Strengths

As a positive note, Mr. Ferree had the following comments:

1. Military instructional material is generally well researched, developed and tested and most educators have confidence in its ability to develop a specific skill.

2. Because the materials are free, the price is right.

3. The military materials have been developed for instructional purposes and therefore, are particularly appropriate for use in the civilian classroom, whereas this may not be true for films secured from agencies such as the telephone company which use a good part of the film for publicity purposes.

Limitations

Military curriculum materials may have the following limitations:

1. Much of the material has been designed for developing skills related to specific pieces of equipment which are peculiar only to the military.

2. The material is difficult to acquire, especially the aduiovisual materials.

3. The material is not adequately described so you do not know what the material is or what it is supposed to do until you have received a copy.

General Comments

1. Some of the military instructional materials are outdated.

2. The films could be put on videotape.

3. Suggest that we contact Dr. David L. Jelden, Department of Industrial Arts, University of Northern Colorado, Greeley, Colorado. He has an electronics program built around a collection of military films.

Lockport, Illinois

Contact

Brother Vincent Neil, Chairman of the Aviation Department, Lewis University, Lockport, Illinois.

School Description

Lewis University is a four-year private university. The university offers a two-year program in Air Frame and Power Plant Mechanics and a four-year program in Aircraft Maintenance Management. Approximately 250 students enroll as majors in the university's aviation program each year.

Kinds and Use of Materials

Brother Neil is an instructor, as well as chairman, in the Aviation Department. He teaches a course entitled "Aviation Electricity II." With an enrollment of about 40 students per semester, Brother Neil uses programmed instructional booklets (hydraulics, electricity, electronics) developed by the Air Force and Navy. These materials are acquired through (1) direct contacts and visits to Chanute Air Force Base, and (2) graduates of the department who enter the military or students who were former service persons. The booklets are used as supplements to the basic text and provide drill and exercise activities for the students. Students are required to complete and turn in written exercises in the booklet. Based on expected enrollment, the department reproduces the booklets and makes them available (at cost of reproduction) to students via the university's book store.

Strengths

Brother Neil was especially pleased with the quality of the materials used and indicated that students' reactions to the materials were also positive. Very few modifications were necessary and the terminology was appropriate for aviation students. Of course, he was satisfied with the free access to these materials.

Limitations

The major limitation for Brother Neil in using military curriculum materials in the area of aviation is the difficulty in obtaining aircraft maintenance manuals.

General Comments

1. Make master copies available on loan for photocopying at institutions expense.

2. Work cooperatively with commercial publishers to make materials available at cost.

3. Provide a listing of military maintenance manuals (by manual numbers) for aircraft schools.

4. Make materials available in different formats for review prior to purchase, rent, or loan.

5. Audiovisuals provided by the Aerospace Education Foundation were not of sufficient quality to justify the cost involved.

Poughkeepsie, New York

Contact

Mr. Henry Horowitz, Associate Professor, Dutchess Community College, Poughkeepsie, New York.

School Description

Dutchess Community College is a two-year associate degrees granting institution. It offers the associates of arts, science, and applied science degrees. A one year certificate program is also available. Approximately 3,500 full-time students are enrolled at the college. The majority of the students are high school graduates, with about 10 percent veterans.

Kinds and Use of Materials

Mr. Horowitz is an instructor in the Department of Engineering Science and Industrial Technology. He presently uses a variety of printed and audio-visual materials developed by the Army, Air Force, and Navy (teacher manuals, programs of instruction, slides, transparencies, films, and military film catalogs). The materials are used as the basic text, as reference, or as a supplement to the text. Most often, however, Mr. Horowitz uses the materials acquired as references for developing his own lessons and courses. He depends heavily on established contacts at military installations as the major source to obtain needed materials. His years of experience in the Air Force and Army have added to his familiarity with the military structure and thus, have increased his ability to request (and successfully obtain) specific materials from the armed services. Mr. Horowitz has also obtained materials from such

sources as ERIC, AIM/ARM, NTIS, and the Superintendent of Documents. These sources, however, have not proven to be as satisfactory as the direct contact with the military. He is attempting to involve more instructors in using military materials and he also anticipates using military materials in a new course entitled "Building Management and Maintenance (Maintenance Mechanics)." The present plan is to introduce the course in September of 1977. Mr. Horowitz presently has experience using military materials in the following course areas: land surveying, welding, strength of materials, food design, physics, drafting, manufacturing processing, metallurgy, orthopedic brace making, and computer programming. When teaching the computer programming course, Mr. Horowitz used the entire naval method of computer programming.

Strengths

Mr. Horowitz had the following positive comments:

1. The military materials are available free or on loan.
2. Military materials can be adapted and used as a basic text when not available from other sources.
3. There is very little difference between the way the military and commerical agencies present the subject matter.
4. Materials are to-the-point and are geared to various grade and ability levels.
5. Materials are updated.

Limitations

One minor limitation pointed out by Mr. Horowitz is the amount of modifications (military terminology) to be made in some of the subject matter. Some educators are turned off by the military terminology and others feel that modifications are too time consuming.

General Comments

1. Mr. Horowitz has made some purchases of military materials at personal expense. This may be due in part to his satisfaction with military materials previously used.
2. One must understand military organization to be able to select and obtain the best materials from any one service area. One must be familiar with each of the service branches and its counterparts.
3. Make known to the user what is available and the acquisition procedures required. Provide more information than is given on available materials by commercial publishers.

4. Use several channels to publicize the availability of military materials for civilian use (e.g., American Welding Society).

5. Offer a course (in a recurring fashion) to teach potential users how to use the SYSTEM.

6. Allow teachers to make personal modifications in materials.

Brecksville, Ohio

Contact

Mr. Milton Loeding, Supervisor, Cuyahoga Valley Joint Vocational School, Brecksville, Ohio.

School Description

Cuyahoga Valley Joint Vocational School serves eleventh and twelfth graders from five high schools in the southeast Cleveland suburban area. Facilities and equipment are new and rather extensive. Over 14 vocational programs are offered, some of them serving adults as well as high school students.

Kinds and Use of Materials

Four educators were interviewed and all but the director have from 2-10 years of experience using military materials. Six instructors are presently using Air Force, Navy, and Army manuals in electricity, electronics, and automotive mechanics. Materials were about equally represented from each of these three military branches. The materials were a part of their personal collection while in the military and a few were requested from the Superintendent of Documents. Other sources mentioned were the National Audiovisual Center, state or regional curriculum laboratory, state curriculum materials laboratory, and the state department of education supervisors. The instructors use excerpts from the materials for hand-outs and work exercises. Transparencies are developed from some of the illustrations in the manuals. Minor modifications, such as deletion of military jargon or pictures, are necessary in some situations. Occasionally, military films are obtained directly from the military on loan to support the manuals.

Strengths

Persons interviewed were positive toward military curriculum materials' use in civilian vocational programs. Specific strengths mentioned were:

1. Military materials are technically accurate and up-to-date.

2. The materials are an excellent source of illustration for producing audiovisuals in the local school.

Limitations

Even though the educators interviewed had backgrounds in the Air Force, Army, or Navy, they nonetheless indicated some problems in obtaining military materials. Among those mentioned were:

1. Time delay in receiving materials.

2. Not knowing what is new or available.

3. Unclear instructions for ordering.

4. Too much paperwork.

5. Very limited access.

A few problems have arisen in using military materials. Some materials are specifically designed for study with military equipment. They must also be blended into existing curriculum, and must be matched with the background and reading ability of students.

General Comments

1. Make audiovisual materials available to cover the basic information and theoretical knowledge.

2. Keep the reader in mind by providing more high-quality illustrations in the materials.

3. Have military recruiters bring out specific mockups or models pertaining to the lesson at hand. This would give the lesson an added dimension while students get exposure to military personnel.

4. The quality of the materials must allow duplication at the local school.

Fremont, Ohio

Contact

Norbert A. Wethington, Director of Evening Division, Terra Technical College, Fremont, Ohio.

School Description

Terra Technical College is a public, coeducational, two-year associate degree granting institution. The college offers over twenty degree programs (with all but one being offered evenings) in Applied Business or Applied Science. In addition, adult courses and seminars are specialized courses designed to meet the needs of business and industry are offered at the college. The institution's enrollment is approximately 1300 students. The average age of students attending the college is 26 years old. This may seem uncommon at most schools; however, at Terra Technical College most of the enrollment consists of students who graduated from high school three to five years ago (some veterans) and are returning to school for further education.

Kinds and Use of Materials

Mr. Wethington uses a number of Navy films and one Navy manual acquired from the American Medical Association Library. Army manuals are also being used. In addition, Mr. Wethington has requested and obtained Air Force films from the Air Force film library at Norton Air Force Base. Materials are also being used which were obtained through the National Technical Information Service (NTIS), the Superintendent of Documents, and the Civil Air Patrol. The materials are being used in Childhood Development and Law Enforcement programs. Most of the materials are used on a free loan basis; there are occasions, however, when a rental fee is charged. The materials are released for a period of one week or more, when requested. Materials obtained from NTIS and the Superintendent of Documents, along with all other permanent loan materials, are housed in the college library for use by faculty and students.

Mr. Wethington has used films on emergency childbirth, safety, and law enforcement. Some of the printed materials address first aid, highway safety, and transportation of the sick and wounded. Although he used films more often than the printed materials, all of the military-developed materials are used in a supplemental way with the basic text. No students have voiced dissatisfaction with the materials.

Strengths

1. Materials are free or available at a small rental fee.
2. Materials adequately supplement the text and subject matter taught.
3. Very few modifications are needed in the films used (clothing may be updated but a minor concern).
4. Materials serve as basic text until other materials are identified.
5. Materials serve as reference in course or program development.

Limitations

1. It is very difficult to acquire materials from the military unless specific information is given.

2. Accurate sources of information are not known to staff.

3. There is no central location or source from which to request materials.

General Comments

1. Make materials for review available in forms other than microfiche.

2. Provide master copies of materials for reproduction by institutions.

3. Development of a catalog would be one of the most beneficial efforts of this project.

Galion, Ohio

Contact

Mr. Virgil Hollis, instructor of Emergency Medical Care, North Central Technical College, Galion, Ohio.

School Description

North Central Technical College is an associate degree granting institution and offers a number of day and evening courses. The college enrolls about 2700 students. High school graduates make up the larger portions of day students and fully employed workers make up the majority in evening classes. The course on emergency medical care is taught in the Department of Law Enforcement.

Kinds and Use of Materials

Mr. Hollis used a number of military-developed audio and visual materials in the course "Emergency Care and Service #932." He has obtained slides and films through agencies, such as the Atomic Energy Commission, Civilian Defense, contacts with Air Force and Navy offices, State Department of Transportation, and State Department of Health's satellite station in Mansfield, Ohio. The materials used in his course are supplemental to the basic text. Although the materials provide basic information, a number of them have not been updated to include techniques, equipment, practices, and materials in this

area. The materials do, however, present a vivid and realistic picture of occurrences in the real world. Students in Mr. Hollis' class have not voiced any dissatisfaction with the materials.

Strengths

Positive comments by Mr. Hollis were that the materials are very specific and to-the-point, and they relate the subject matter and examples in a fashion appropriate for civilian use.

Limitation

The major limitation in using military materials, as expressed by Mr. Hollis, is the outdatedness of some of the materials available in his area.

General Comments

1. Supply a film catalog and slide syllabus, giving availability information.
2. Send a letter to each department on materials available in that area; invite a consultant in and increase faculty awareness and interest in military materials.
3. Update (from about 1969 on) texts and other materials in the area of parametrics.
4. Provide free materials or materials at cost.
5. Establish satellite stations or a central distribution center.

Waco, Texas

Contact

Mr. Carl J. Kuhnle, Jr. and J. D Smith, Texas State Technical Institute, James Connally Campus, Waco, Texas.

School Description

Texas State Technical Institute is an independent state institute with four campuses: the Rio Grande Campus in Harlingen, the Rolling Plains Campus in Sweetwater, the Mid-Continent in Amarillo, and the James Connally Campus in Waco. Over 60 program of study are offered at the Texas State Technical

Institute ranging in length from a few months to two years. Credits earned at the Institute are transferable to the growing number of universities across the state. Credits can be applied toward Bachelor's and higher degrees. The students have the option of completing their associate degree work and beginning work toward a Bachelor's degree from Southwest Texas State University and special cooperative training programs. The Institute offers both associate degree programs and skill development areas. Advanced study beyond the associate degree level is also offered as well as continuing education courses which are available for those who wish to upgrade their skills. Industrial cooperative training is available in most regular programs to allow student to earn the money to continue in school obtaining valuable work experience. Graduates are placed by each program area.

Kind and Use of Material

Mr. Kuhnle and Mr. Smith are instructors in the air conditioning and refrigeration technology program. A two-year associated degree program and a one-year skill development program are offered. There are seven full-time staff members in the program area which enrolls approximately 125 students, 76 percent of which are in the one-year skill development program. Mr. Kuhnle is presently using some military student workbooks received from the Community College of the Air Force on refrigeration and cooling. He has duplicated some self study sections on compressors, water pumps, and cooling towers from the student workbooks and is using them as student handouts and study guides. Total time of use probably is about six hours. Mr. Smith has recently received some materials on refrigeration and cooling from Sheppard Air Force Base, Witchita Falls, Texas. These are primarily plans of instruction and Air Force correspondence courses and he is unsure of how he will use the material. Staff are being encouraged by the administration to incorporate as much self instructional material in their programs as possible. At the time, little or no military hardware was being used in the air conditioning and refrigeration technology program.

Strengths

A positive comment made by both instructors concerning military materials in the area of refrigeration and air conditioning is that the military probably has instructional material which is not available from any other source. The problem lies in identification and acquisition.

Limitations

The major limitations involved in using military material as identified by Mr. Kuhnle and Mr. Smith are:

1. The material is not generalizable enough; in other words it is too specific to the military.

2. Students have difficulty relating to the material because it uses examples which are not commonly found in the civilian sector.

3. Source of the material is difficult to identify and once it is identified there is no way to determine what kinds of material are actually included in the program.

General Comments

1. Mr. Kuhnle and Mr. Smith were not sure that the materials would be so attractive to educators if there is a cost involved. At the present time their attractiveness seems to be that they are free.

2. Military materials are difficult to locate and the descriptions are inadequate to determine content and potential value.

3. Much of the military refrigeration and cooling material was developed by private commercial firms, therefore, there are some copyrighting implications.

Salt Lake City, Utah

Contacts

Mr. Walter Ulrich, State Director of Vocational Education, and Dr. David Gailey, State EPDA Coordinator for Vocational Education, Utah Department of Education, Salt Lake City, Utah.

Agency Description

The Division of Vocational Education in the Utah Department of Education provided the state leadership for initiating and conducting the Utah project with the Aerospace Education Foundation. The Division of Vocational Education established a network of participating schools to use Air Force materials. Dr. David Gailey coordinated the flow of materials and communications among the schools. Mr. Walter Ulrich represented the project to the State Board and supplied the needed administrative support.

Kinds and Use of Materials

Since the project was completed, the Division of Vocational Education has utilized military curriculum materials as a major input to developing three state curriculum guides (electronics, hydraulics, nursing) for teachers. An additional state guide in masonry is under preparation, with content based heavily upon military materials. Dr. Gailey feels the use of military

curriculum materials has increased substantially due to their *indirect* application via the State Curriculum Guides. He indicated that many of the teachers using the materials view them as state-developed rather than military-developed. Although the Air Force is acknowledged in the guides, teachers feel that they are "Utah products" and accept them more readily with state identification.

Strengths

1. The criterion-referenced instructional base for Air Force materials is a good approach to improving vocational instruction.

2. Air Force materials are best utilized when they supplement existing curricula, rather than when they are used *in toto*.

3. Air Force films were a major component among the materials used. The Air Force gave Utah three original sets of films to support courses being tested and the Division of Vocational Education had 12 additional copies of each set of films reproduced, making 15 sets available for use in the state.

Limitations

Both Ulrich and Gailey agreed that one problem in obtaining materials is the delay due to military red tape. The use of military materials also may be hindered by:

1. Needed modifications in wording.

2. Unavailability of equipment mentioned in military texts.

3. Presentation of specific training goals that may be too narrow for civilian use.

4. The highly structured nature of the material appears too regimented, providing no incentive for students to go through them.

General Comments

1. List all military instructional units with descriptions of content.

2. Since most military materials are geared to specific training (job) goals, combine these materials with civilian materials.

3. Edit military films for information not applicable to civilian use and change lengthy pauses awaiting student response.

Salt Lake City, Utah

Contact

Mr. Joseph Baker, Electronics Instructor, Utah Technical College, Salt Lake City, Utah.

School Description

Utah Technical College at Salt Lake City is one of several state supported technical colleges. The relatively new campus is southwest of the city with very modern and attractive facilities and an enrollment of over 2,000 students. Large, specialized departments offer programs in mechanics, construction, allied medicine, and business. There are six instructors in electronics.

Kinds and Use of Materials

Mr. Baker was one of the participants in the "Utah project" described previously. He has three years of experience using military materials developed for the Air Force, Army, and Navy. Air Force printed materials, slides, and films were obtained from Lowery Air Force Base. Additional materials have been requested through the Superintendent of Documents and the Utah Department of Education. Since the project was completed, use of the Air Force materials has declined. He felt the school did not make extensive use of the materials due to internal staff and organizational changes, and accreditation. A major factor which contributed to the use of military materials in the project was that the materials were obtained through the Utah Department of Education and that the State Board had funds for reproduction of materials.

Strengths

Mr. Baker pointed out the following strengths of military curriculum materials:

1. The materials are viewed as superior to traditional materials because military training objectives are narrower than educational objectives.

2. Air Force training films "do a good job," but many instructors and students view some of them as "Mickey Mouse."

3. Military materials are a good supplement to those already in use by teachers.

Limitations

1. The "military" term creates a barrier for many teachers and students.

2. Materials are often regimented, causing some teacher resistance. Teachers often view such "cookbookishness" as a threat to their professionalism.

General Comments

1. State-level encouragement is necessary for teachers to try and use military materials.

2. Utah Technical College (UTC) at Provo has achieved more extensive implementation of Air Force materials, especially training films. Mr. Don James, electronics instructor at UTC/Provo, is still actively using these films, transferred to a videotape medium.

Sandy, Utah

Contact

Mr. Roger King, Electronics Instructor, Jordan High School, Sandy, Utah.

School Description

Jordan High School is a comprehensive high school of about 1,600 students in grades 9-12. The school is located on the far south side of Salt Lake City. Facilities and equipment were several years old but well maintained. The vocational programs included trade and industrial, home economics, distributive, and business education.

Kinds and Use of Materials

Mr. King used Air Force materials for over a year in the late 1960's as part of the "Utah project." He used printed materials, slides, and films obtained through participation in the project to compare Air Force materials with traditional materials. He used these materials as a supplement to the text; up to about 25 percent of the instruction involved the use of military materials. Sophomores comprised the student group for using the materials, and only the direct current (DC) part of the electronics course was used. For a time following the project, Mr. King used Air Force films without accompanying printed materials with the exception of student response sheets designed for the films.

Strengths

The major strength pointed out was that student response sheets (used with Air Force films) were excellent. These sheets are similar in format to programmed texts.

Limitations

Mr. King felt there were a number of limitations in using Air Force materials with high school students. When interviewed he indicated that he no longer used the materials due to their limitations. Specifically, he reported that:

1. Generally the software necessary to support Air Force courses was not available to him.

2. Films used were extremely slow, with long pauses that were boring to the students.

3. Printed materials were too technical and too detailed to hold student interest.

4. No difference was found between the Air Force curriculum and the traditional curriculum among the test class of sophomores. He felt that the materials may be more appropriate among high school students in grades 11-12.

General Comments

1. Match equipment with the curriculum materials used.

2. Materials should include more than 50 percent time for hands-on involvement by students.

3. Caution instructors to use materials as an aid to their courses and not necessarily make the curriculum materials the course itself.

4. Reproduction of printed materials in the local school is expensive.

Randolph, Vermont

Contact

Mr. Bruce Palmer, Radio Communications Instructor, Randolph Vocational Center, Randolph, Vermont.

School Description

Randolph Vocational Center enrolls about 400 eleventh and twelfth grade students each year. The center offers a two-year program in trade and industrial education, office education, office graphics, distributive education, child care and seamstress (home economics education), health, and radio communications. The center services students from five district schools.

Kinds and Use of Materials

Mr. Palmer uses a number of printed materials in the radio communications program. Surplus military equipment is also used in his classes to provide hands-on experience for students. The class is composed of approximately 14 students per half day. Materials being used in the program were developed by the Air Force, Navy, Army, and Coast Guard. Because the materials were unavailable in this area, Mr. Palmer uses military materials extensively as basic texts and as reference materials for course development. Excerpts are taken from the printed materials and photocopied for student use. Acquisition of materials has been through direct contacts with military agencies, the Government Printing Office, personal contacts, and military recruiting offices.

Strengths

Mr. Palmer felt that the military service areas had done a very effective job in presenting information in his subject matter area. Because he has not been able to identify needed materials from commercial sources, the availability, quality, and adaptability of certain military materials have been a plus in his situation.

Limitations

Primary limitations involved in using military materials are the extensive amount of time between requesting and receiving materials and the unavailability of the classified materials thought to be useful in civilian educational programs.

General Comments

1. Materials match with the ability level of students.
2. Leave modifications of materials to individual teachers.
3. Provide detailed descriptions of materials to better assist one in selecting appropriate materials.
4. Decrease the amount of time for filling requests for materials.
5. Minimize cost involved in making materials available.

Cleveland, Wisconsin

Contact

Mr. Mel DeSwarte, electronics instructor, and Mr. Marvin A. Schroder, curriculum specialist, Lakeshore Technical Institute, Cleveland, Wisconsin.

School Description

Lakeshore Technical Institute is part of the Wisconsin system of vocational, technical, and adult education. The Cleveland branch offers the associate degree, vocational diploma, and adult and continuing education programs. Courses are available in agriculture, business administration, home economics, general education, trade and industry (industrial and technical), graphic and applied arts, and health occupations. Programs offered range from 36 to 40 hours and students are enrolled from all over the state.

Kinds and Use of Materials

Mr. Schroder stated that one of his responsibilities as curriculum specialist is to make staff members aware of any curriculum materials available in their area. The staff members decide if further follow-up is necessary. The "Electronics Principles" course, developed by Aerospace Education Foundation, was acquired and reviewed in this manner. Mr. DeSwarte is presently using portions of the package (Blocks I-IV and V) in his electronics course. The materials are reproduced in the institute's printing and duplicating facilities. Students review the videotapes to gain information for completion of TVI Guide exercises and to strengthen their understanding of information in the texts. Mr. DeSwarte found slide presentations not to be very effective. He attributed this to the absence of motion or action in this type of media. He expressed overall satisfaction with the materials, although "many videotapes had to be sent back because of poor quality in reproduction."

Strengths

Mr. DeSwarte was confident that audiovisual means of teaching are very effective, and to have military materials available in these formats (in addition to printed matter) is definitely an asset. He was also pleased to have materials available for review before purchasing and a quality applicable for reduction.

Limitations

Mr. DeSwarte has had experience using materials developed by Aerospace Education and perceived no limitations in the use of the materials. He did, however, feel that cost may cause concern by some institutions wishing to use military materials. The absence of adequate descriptions of materials available may also limit their use.

General Comments

1. Provide preview kits or samples of the materials available (upon request).

2. Focus on making those materials available that are (especially audiovisuals) needed to teach the course and not so much on supplemental materials.

3. Provide adequate descriptions of materials, their purpose, formats.

4. Make materials available for duplication by providing master copies upon request.

5. Schools can work cooperatively by sharing materials acquired.

6. Study Aerospace's dissemination system and make linkages where appropriate.

7. Use Curriculum Coordination Centers where appropriate to make military-developed materials available.

APPENDIX E

Curriculum Priority Areas in Which Curriculum Materials Are Needed for Job Specialties

Curriculum Priority Areas with Job Specialties in Which Curriculum Materials Are Presently Needed

APPENDIX E

CURRICULUM PRIORITY AREAS IN WHICH MATERIALS
ARE NEEDED FOR JOB SPECIALTIES

Curriculum Area*	Number of Times Reported	Priority
Electronics Occupations	133	1
Health Occupations	67	2
Metalworking	66	3
Automotive Service	42	4
Aviation	41	5
Construction and Maintenance Trades	38	6
Industrial Arts	33	7
Business and Office Occupations	28	8
Air Conditioning	26	9
Electrical Occupations	20	10
Instrument Maintenance and Repair	14	11
Agriculture	11	12
Law Enforcement and Corrections	10	13
Energy and Environmental Conservation	10	14
Diesel Mechanics	9	15
Woodworking	8	16
Business Machine Repair	7	17
Graphic Arts	6	18
Food Service	6	19
Appliance Repair	5	20
Distributive Education	4	21

*See Appendix E for a list of specific occupations included in each area above.

APPENDIX E

CURRICULUM PRIORITY AREAS WITH JOB SPECIALTIES IN WHICH CURRICULUM MATERIALS ARE PRESENTLY NEEDED

Priority #1 -- Electronics Occupations

U.S.O.E.	Specific Curriculum Area	Number of Times Reported
1303	Laser Technology	2
1715	Industrial Electronics	8
1715	Radio/Television	24
1715	Communications Technology	13
1715	Basic Electronics	25
1715	Medical Electronic Technician	11
1715	Integrated Circuit Technology	10
1715	Teletype Operator	2
1715	Digital Technician	11
1715	Telephone Technology	1
1715	Data Communications	1
1715	Microwave Transmission/Technology	5
1715	Broadcasting Station Engineer	1
1715	Computer-Assisted Inventory Control	2
1715	Computer Hardware Specialty	1
1715	Marine Electronics Technician	1
1715	Computer Repairman	2
1715	Electrical-Electronic Trouble Shooting	3
1715	Pneumatic & Electronic Controls	2
1715	Laser-Electronic Optic Repairman	1
1715	Electronics Technician	2
1715	Electronics Repairman	1
1720	Radar	3
	Total	133

Priority #2 --Health Occupations

U.S.O.E. Code	Specific Curriculum Area	Number of Times Reported
0701	Dental Laboratory Technology	9
0701	Dental Hygiene	2
0701	Dental Assisting	5
0701	Dental	1
0702	Medical Laboratory Technology	12
0703	Nursing	7
0703	Nursing Aide	1
0703	Operating Room Nursing	1
0703	Emergency Medical Services (layman)	1
0704	Pysical Therapy	2
0704	Occupational Therapy	1
0704	Rehabilitation Therapy	1
0705	X-ray Technology	1
0705	Nuclear Medicine	1
0705	Medical Electronics	1
0706	Optometric Assistant	1
0707	Sanitation	1
0708	Mental Health Technology	1
0708	Psychrometrics	1
0709	Medical Assistant	1
0709	Emergency Childbirth	1
0709	Emergency Medical Services (professional)	2
0709	Medical Secretary	1
0709	Orthopedic	1
0799	Musical Therapy	1
0799	Bio-Medical	1
0799	Advanced Life Support Techniques	1
0799	Anatomy & Physiology of Trauma Victims	1
0801	Self Image Psychology	1
0901	Nutrition	4
0902	Child Care & Guidance	2
		Total 67

Priority # 3 -- Metalworking

U.S.O.E.	Specific Curriculum Area	Number of Times Reported
1923	Welding & Cutting	30
1923	Sheet Metal	10
1923	Tool & Die Making	3
1923	Boilers & Accessories	3
1923	Facesimile Operator	1
1923	Surface Grinder Operator	1
1923	Casting	1
1923	Lathe Operator	4
1923	Machine Operator	6
1923	Electroplating	1
1923	Brazing	1
1923	Trouble Shooting (small tonnage equipment)	1
1923	Forging	1
1923	Metal Patternmaking	1
1923	Machine Shop	2
	Total	66

Priority #4 -- Automotive Services

U.S.O.E.	Specific Curriculum Area	Number of Times Reported
1703	Mechanics	28
1703	Automotive Electrical Systems	1
1703	Body and Fender	1
1703	Automotive Repairman	5
1703	Fuel Injection Repair/Rebuild	2
1703	Auto Painting	1
1703	Hydraulics	2
1703	Turbo and Blower Rebuild	2
	Total	42

Priority # 5 -- Aviation

U.S.O.E.	Specific Curriculum Area	Number of Times Reported
1304	Aeronautics	1
1704	Aircraft Maintenance	5
1704	Airframe & Power Plant Technician	1
1704	Aircraft Mechanic	7
1704	Plastic Repairman	1
1704	Aircraft Inspection	1
1704	Airplane Pilot	1
1704	Aircraft Hydraulics	2
1704	Aviation Management	1
1704	Aircraft Sales	1
1704	Avionics Technology	7
1704	Aircraft Structures Technician	3
1704	Aircraft Utility & Warning Systems	2
1704	Airport Design	1
1704	Aircraft Reciprocating Engines	1
1704	Aircraft Electrical Systems	1
1704	Aviation Electronics Technician	2
1704	Aircraft Law	2
1704	Airline Economics 1980-1990	1
	Total	41

Priority # 6-- Construction & Maintenance Trades

U.S.O.E.	Specific Curriculum Area	Number of Times Reported
1710	Highway Engineering Aide	2
1710	Carpentry	17
1710	Heavy Duty Mechanics (Construction)	1
1710	Roofing	1
1710	Plumbing and Pipefitting	6
1710	Masonry	5
1710	Drywall	1
1710	Duct Construction & Installation	2
1710	Plastering	2
1710	Heavy Equipment (Construction)	1
1717	Job Bidding	1
	Total	39

Priority #7 --Industrial Arts

U.S.O.E.	Specific Curriculum Area	Number of Times Reported
1002	Ceramics	1
1003	Drafting	12
1003	Surveying	7
1003	Shop Drawing	1
1003	Tool Design	1
1007	Graphic Arts	1
1012	Numerical Control	2
1016	Transportation	4
1927	Plastics	2
1927	Plastic Molds	1
	Total	33

8 - Business and Office Occupations

0317	Computer	1
0317	Computer Programming	2
0317	Computer Technology	6
0317	Computer Brake System	1
0317	Computer Software Speciality	1
1401	Accounting	1
1401	Machine Operators	1
1401	Bookkeeping	1
1402	Computer Operator	1
1402	Key Punch Operator	1
1403	General Office Clerk	1
1403	File Clerk	1
1405	Quality Control	3
1406	Tests Equipment Technicians	3
1407	Secretarial Science	3
1407	Shorthand	1
	Total	28

Priority # 9-- Air Conditioning

U.S.O.E.	Specific Curriculum Area	Number of Times Reported
1701	Heating	5
1701	Air Conditioning	4
1730	Refrigeration	5
1730	Refrigeration & Air Conditioning Systems	8
1730	Cooling	2
1730	Ventilating	2
		Total 26

Priority #10--Electrical Occupations

U.S.O.E.	Specific Curriculum Area	Number of Times Reported
1714	Power Lineman	1
1714	Electrician	15
1714	Electrical Power Technology	1
1714	Electrical Trouble Shooting	1
1714	Telephone Installation	1
1714	Motor Repairman	1
		Total 20

Priority #11-- Instrument Maintenance and Repair

U.S.O.E.	Specific Curriculum Area	Number of Times Reported
1721	Instrument Repair	6
1721	Watch & Clock Repair	1
1721	Plant Maintenance	3
1721	Hydraulic Repair	1
1721	Injector Pump Repair	1
1721	Industrial Equipment Repair	1
1721	Equipment Maintenance	1
		Total 14

101

Priority #12--Agriculture

U.S.O.E.	Specific Curriculum Area	Number of Times Reported
0101	Animal Health Technology	1
0101	Agriculture (business & production)	1
0103	Farmer	1
0105	Horticulture	1
0106	Forest Manager	1
0106	Wildlife Technician	1
0106	Lumber/Forest	1
0106	Veterinarian Assistant	1
0107	Sawmill Occupations; Slope Chaining	1
0107	Log Buyer	1
0107	Chainsaw Operator	1
		Total 11

Priority #13--Law Enforcement & Corrections

U.S.O.E.	Specific Curriculum Area	Number of Times Reported
1728	Safety & Health Management Officer	1
1728	Security	3
1728	Corrections Officer	1
1728	Safety	3
1728	Law Enforcement Officer	1
1728	Accident Investigation	1
		Total 10

Priority #14-- Energy & Environmental Conservation

U.S.O.E.	Specific Curriculum Area	Number of Times Reported
1601	Energy Conservation	1
1601	Pollution Control	1
1601	Electromechanical Technology	4
1601	Emission Control	1
1601	Solar Energy Technology	1
1601	Heat (loss & gain)	1
1602	Soil Conservation	1
		Total 10

Priority #15-- Diesel Mechanics

U.S.O.E.	Specific Curriculum Area	Number of Times Reported
1712	Diesel Mechanic	2
1712	Marine Diesel	1
1712	Diesel Fuel Systems	2
1712	Diesel Engine	1
1712	Diesel Tune-up & Troubleshooting	2
1712	Diesel & Automotive Electrical Systems	1
	Total	9

Priority #16--Woodworking

U.S.O.E.	Specific Curriculum Area	Number of Times Reported
1736	Milwork and Cabinet Making	3
1736	Milling Machine Operator	3
1736	Vertical/Horizontal Milling	2
	Total	8

Priority #17-- Business Machine Repair

U.S.O.E.	Specific Curriculum Area	Number of Times Reported
1706	Business Machine Repair	4
1706	Office Machine Repair	1
1706	Fluid Power Service	2
	Total	7.

Priority #18-- Graphic Arts

U.S.O.E.	Specific Curriculum Area	Number of Times Reported
1719	Lithographic Pressman	1
1719	Graphic Arts	1
1719	Photography	2
1719	Audiovisual Technology	1
1719	Printing	1
		Total 6

Priority #19-- Food Service

U.S.O.E.	Specific Curriculum Area	Number of Times Reported
1729	Food Preparation	3
1729	Food Services	1
1729	Baking	1
1729	Cooking	1
		Total 6

Priority #20-- Appliance Repair

U.S.O.E.	Specific Curriculum Area	Number of Times Reported
1702	Appliance Repair	2
1702	Sewing Machine Operator	1
1702	Serviceman	1
1702	Electric Motor Repair	1
		Total 5

Priority #21-- Distributive Education

U.S.O.E.	Specific Curriculum Area	Number of Times Reported
0400	Aviation Insurance Underwriter	1
0400	Growth Factors - Aviation Market	2
0400	Warehousing	1
	Total	4

Priority -- Miscellaneous

U.S.O.E.	Specific Curriculum Area	Number of Times Reported
1105	Metric Systems	1
1111	General Mathematics	5
1303	Physics & Chemistry	2
1303	Materials Science	1
1303	Thermodynamics	1
1711	Maintenance Mgt. Supervisor	1
1799	Mining	3
1799	Ski Slope Equipment	2
	Total	16

APPENDIX F

Curriculum Priority Areas in Which Curriculum Materials Are Needed for Job Specialties in the Next 3-5 Years

Curriculum Priority Areas with Job Specialties in Which Curriculum Materials will be Needed in the Next 5-10 Years

APPENDIX F

Curriculum Priority Areas in Which Curriculum Materials Are Needed for Job Specialties in the Next 3-5 Years

Curriculum Area*	Number of Times Reported	Priority
Electronics Occupations	69	1
Energy and Environmental Conservation	51	2
Health Occupations	29	3
Business and Office Occupations	11	4
Industrial Arts	9	5
Automotive Services	8	6
Air Conditioning and Refrigeration	4	7
Metalworking	4	8
Aviation	3	9
Construction and Maintenance	3	10
Electrical Occupations	3	11
Agriculture	2	12
Business Machine Repair	2	13
Appliance Repair	1	14
Diesel Mechanic	1	15
Distributive Education	1	16

*See Appendix F for a list of specific occupations included in each area above.

APPENDIX F

CURRICULUM PRIORITY AREAS WITH JOB SPECIALTIES IN WHICH CURRICULUM MATERIALS WILL BE NEEDED IN THE NEXT 5-10 YEARS

Priority #1 -- Electronics Occupations

U.S.O.E.	Specific Curriculum Area	Number of Times Reported
1303	Laser	14
1303	Laser Technology	4
1715	Airframe Radar	1
1715	Microwave Communication	1
1715	Solid State Troubleshooting	1
1715	Digital Technician	1
1715	Digital Systems	4
1715	Integrated Circuits	8
1715	Electronics	7
1715	Microelectronics	2
1715	Medical Electronics	3
1715	Space - Earth Communications	1
1715	Microprocessors	2
1715	TV Systems Technology	3
1715	Digital Equipment	1
1715	Digital Circuits	2
1715	Microwave Landing Systems	1
1715	Semiconductors	1
1715	Radio, TV, Audio Systems Service/Sales	5
1715	Industrial Electronics	1
1715	Communications Devices and Technician	2
1715	Logic Circuits	1
1715	Communications	2
1715	Electronic Motor Controls	1
	Total	69

Priority #2 -- Health Occupations

U.S.O.E.	Specific Curriculum Area	Number of Times Reported
0700	General Health Occupations	1
0701	Prosthesis	1
0701	Dentistry	1
0702	Clinical Laboratory	1
0703	Nursing Aide	1
0703	Nursing	1
0704	Recreation, Physical	2
0705	Nuclear Health Personnel	1
0705	Bromedical Electronics/Electricity	4
0705	Nuclear Medical Technician	1
0705	Nuclear Medicine	2
0705	Radiology	1
0706	Optics	1
0708	Mental Health Technology	1
0709	Paramedics	1
0709	Medical Technical Aide	4
0799	Musical Therapy	1
0799	Medical Electronics Technician	2
0799	Medicine Research	1
0801	Health Services	1
	Total	29

Priority # 3-- Energy & Environmental Conservation

U.S.O.E.	Specific Curriculum Area	Number of Times Reported
1304	Ecological Technology	1
1304	Geothermal	1
1601	Solar Energy	21
1601	Alternate Energy	1
1601	Safety Engineering	1
1601	Water/Energy/Soil Conservation	6
1601	Energy Engineering	1
1601	Environmental Control	2
1601	Pollution Control	1
1601	Nuclear Technology	2
1601	Electronic Mechanic	1
1601	Heating	1
1601	Ecology	1
1601	Microwave Theory	1
1601	Solid Trash Disposal	1
1601	Coal Gasification	2
1601	Secondary Resource Management	1
1601	Artificial Fuel Manufacturing	1
1606	Forestry	1
1606	Navigation Systems	1
1720	Atomic Energy	1
1732	Nuclear Energy	1
1732	Nuclear Power Plant Technician	3
1732	Electric Power Generating	1
	Total	54

Priority # 4 -- Business and Office Occupations

U.S.O.E.	Specific Curriculum Area	Number of Times Reported
0317	Computer Technology/Systems	7
0317	Computer Service/Operation	1
0317	Computer Control & Process	1
1401	Machine Operator (Calculators)	1
1405	Quality Control	1
	Total	11

Priority # 5-- Industrial Arts

U.S.O.E.	Specific Curriculum Area	Number of Times Reported
1003	Surveying	2
1003	Drafting	2
1012	Machine Operator	1
1727	Plastics	4
	Total	9

Priority # 6-- Automotive Services

U.S.O.E.	Specific Curriculum Area	Number of Times Reported
1703	Automotive Electrical System	1
1703	Automotive (Computer)	1
1703	Automotive Electronics/Electricity	4
1703	Emission Control Systems	1
1703	Automotive Fuel Injection	1
	Total	8

Priority # 7 -- Air Conditioning and Refrigeration

U.S.O.E.	Specific Curriculum Area	Number of Times Reported
1701	Heating	2
1701	Air Condition Servicing	1
1730	Refrigeration Servicing	1
	Total	4

Priority #8 -- Metal Working

U.S.O.E.	Specific Curriculum Area	Number of Times Reported
1723	Precision Machinist	2
1723	Flux Cove Welding	1
1723	Exiotic Alloys	1
	Total	4

Priority #9 -- Aviation

U.S.O.E.	Specific Curriculum Area	Number of Times Reported
1704	Helicopter Maintenance	1
1704	Air Cargo	1
2203	Aerospace	1
	Total	3

Priority #10-- Construction and Maintenance

U.S.O.E.	Specific Curriculum Area	Number of Times Reported
1710	Plumbing	1
1710	Carpentry	2
	Total	3

Priority #11 -- Electrical Occupation

U.S.O.E.	Specific Curriculum Area	Number of Times Reported
1714	Electrician	1
1714	Electrical Service	1
1714	Motor Servicing and Control Systems	1
	Total	3

Priority #12--Agriculture

U.S.O.E.	Specific Curriculum Area	Number of Times Reported
0106	Wildlife Management	1
0106	Forest Management	1
	Total	2

Priority #13--Business Machine Repair

U.S.O.E.	Specific Curriculum Area	Number of Times Reported
1706	Numerical Machine Maintenance	1
1706	Office Machine Repair	1
	Total	2

Priority #14--Appliance Repair

U.S.O.E.	Specific Curriculum Area	Number of Times Reported
1702	Home Appliance Service	1
	Total	1

Priority # 15 -- Diesel Mechanic

U.S.O.E.	Specific Curriculum Area	Number of Times Reported
1712	Diesel Fuel Systems	1
		Total 1

Priority # 16 -- Distributive Education

U.S.O.E.	Specific Curriculum Area	Number of Times Reported
0400	Marketing Management	1
		Total 1

Priority -- Miscellaneous

U.S.O.E.	Specific Curriculum Area	Number of Times Reported
1105	Metric and Metric Conversion	4
1303	Cryogenics (Physics)	5
1303	Radio Astrology	1
1719	Lithography/Photography	1
1724	Metallurgy	1
1729	Food Service	1
1799	Mining	1
1799	Chemical Technician	1
		Total 15

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